STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	:SS	
COUNTY OF MINNEHAHA	)	SECOND JUDICIAL CIRCUIT

CHARLES RUSSELL RHINES, Plaintiff, v. SOUTH DAKOTA DEPARTMENT OF CORRECTIONS, MIKE LEIDHOLT, SECRETARY, SOUTH DAKOTA DEPARTMENT OF CORRECTIONS, DARIN YOUNG IN HIS CAPACITY AS WARDEN OF THE SOUTH DAKOTA STATE PENITENTIARY, and JASON R. RAVNSBORG IN HIS CAPACITY AS THE ATTORNEY GENERAL FOR THE STATE OF SOUTH DAKOTA, Defendants.	CIV. 19-_____ **THIS IS A CAPITAL CASE EXECUTION SET FOR BETWEEN NOVEMBER 3, 2019 AND NOVEMBER 9, 2019**

COMPLAINT

COMES NOW PLAINTIFF, and for his Complaint against Defendants, states and alleges as follows:

INTRODUCTION

1. This is a Complaint seeking injunctive and declaratory relief directing Defendants South Dakota Department of Corrections ("DOC"), Mike Leidholt, Secretary of the DOC, Darin Young, in his capacity as warden of the South Dakota State Penitentiary, and Jason R. Ravnsborg, in his capacity as the Attorney General for the State of South Dakota (collectively, "Defendants") to execute Plaintiff Charles Russell Rhines ("Rhines") in accordance with South Dakota Codified Law, to wit, "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict

is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch. 181, codified at SDCL 23A-27A-32. (1984).

2. Rhines is a prisoner sentenced to death by the State of South Dakota on January 29, 1993.

3. Rhines's execution week is November 3, 2019 through November 9, 2019.

4. SDCL § 23A-27A-32.1 provides in pertinent part that "Any person convicted of a capital offense or sentenced to death prior to July 1, 2007 may choose to be executed in the manner provided in § 23A-27A-32 or in the manner provided by South Dakota law at the time of the person's conviction or sentence. The person shall choose by indicating in writing to the warden not less than seven days prior to the scheduled week of execution the manner of execution chosen." SDCL § 23A-27A-32.1.

5. At the time that Rhines was convicted and sentenced, South Dakota law provided, in pertinent part, that: "The punishment of death shall be inflicted by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch. 181, codified at SDCL § 23A-27A-32 (1984).

6. In enacting SDCL § 23A-27A-32.1, the State of South Dakota created a statutory right that entitles Rhines to be executed in the manner provided by South Dakota law at the time of Rhines's conviction or sentence if he chooses that manner.

7. The State, in enacting SDCL § 23A-27A-32.1, also created life and liberty interests entitling Rhines to the same. Rhines's life and liberty interest is protected by the Due Process Clause

of the Fourteenth Amendment of the United States Constitution and the Due Process Clause of Article Six, Section 2 of the South Dakota Constitution.

8. In a Kite-Request Slip dated October 1, 2019, addressed to Defendant Young, Rhines chose to be executed in the manner that was in effect at the time that he was sentenced to death.

9. In an amended Kite-Request Slip dated October 4, 2019, addressed to Defendant Young, Rhines chose to be executed in the manner that was in effect at the time that he was sentenced to death, to wit, "[t]he Two Drug Protocol of a Lethal Dose of An Ultra-Short Acting Barbiturate and a Chemical Paralytic."

10. On October 15, 2019, attorneys for Rhines, emailed and mailed a letter to Defendants Young and Ravnsborg, and Paul Swedlund, Assistant Attorney General in the Office of the Defendant Attorney General, requesting, among other things, confirmation that Rhines's request to be executed by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent would be honored.

11. In a letter dated October 17, 2019, Assistant Attorney General Swedlund advised counsel that he had received "Mr. Rhines' request for execution pursuant to the combination of drugs provided by statute at the time of his execution." Mr. Swedlund noted that "DOC will follow the law." Mr. Swedlund further informed counsel that "[t]he ultra-short-acting barbiturate the state intends to use is pentobarbital."

12. Upon information and belief, pentobarbital is not an ultra-short-acting barbiturate.

13. Numerous courts have held that pentobarbital is not an ultra-short-acting barbiturate. *See, e.g., Smith v. Montana*, No. BDV-2008-303, 2015 WL 5827252 (Mont. Dist. Ct. Lewis and Clark County Oct. 6, 2015) (unpublished) (attached hereto as Exhibit A) ("This Court rules that pentobarbital is not an ultra-fast-acting barbiturate. The State of Montana will either need to select a

barbiturate that is ultra-fast acting to accomplish the execution of Plaintiffs or it will need to modify its statute.")

14. Medical journals provide that pentobarbital is not an ultra-short-acting barbiturate.

15. Defendants' decision to used pentobarbital, contrary to South Dakota law, deprives Rhines of his statutory right to be executed in the manner of his choice. It also deprives Rhines of his life and liberty interests in being executed in the manner of his choice without due process of law guaranteed under the Due Process Clause of the Fourteenth Amendment of the United States Constitution and the Due Process Clause of Article Six, Section 2 of the South Dakota Constitution.

16. Rhines's execution week is a mere two weeks away. Thus, Rhines brings this action for injunctive and declaratory relief to enforce his right under South Dakota law to be executed by the manner he chose, intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent, and not by pentobarbital which is neither an ultra-short-acting barbiturate nor a chemical paralytic agent.

PARTIES

17. Plaintiff Rhines is a United States citizen and a resident of the State of South Dakota. He is currently a condemned inmate in the custody of Defendants and under the supervision of the DOC in Sioux Falls, South Dakota.

18. Defendant South Dakota Department of Corrections ("DOC") is an agency of the State of South Dakota. The DOC is responsible for all prisons in the State of South Dakota, for the custody and treatment of death-sentenced inmates, and for the execution of such inmates.

19. Defendant Mike Leidholt is the Secretary of the DOC and is sued in his official capacity.

20. Defendant Darin Young is the Warden of the South Dakota State Penitentiary and is sued in his official capacity.

21. Defendant Jason R. Ravnsborg is the Attorney General for the State of South Dakota and is sued in his official capacity.

JURISDICTION AND VENUE

22. This Court has jurisdiction to adjudicate this action under the South Dakota Uniform Declaratory Judgments Act, SDCL § 21-24-1 et seq.

23. Venue in this Court is proper under SDCL § 15-5-2(2), which provides that an action against a public officer shall be brought in the county where the cause, or some part thereof, arose. The injury to Plaintiff because of Defendants' illegal actions has occurred and will occur in the County of Minnehaha and, as such, venue is proper in this Court.

FACTS

24. Rhines was sentenced to death on January 29, 1993.

25. On June 25, 2019, Judge Robert Mandel granted a warrant of execution, which sets forth that Rhines shall be executed between November 3 and November 9, 2019.

26. SDCL § 23A-27A-32.1 provides that:

> Any person convicted of a capital offense or sentenced to death prior to July 1, 2007 may choose to be executed in the manner provided in § 23A-27A-32 ***or in the manner provided by South Dakota law at the time of the person's conviction or sentence***. The person shall choose by indicating in writing to the warden not less than seven days prior to the scheduled week of execution the manner of execution chosen. If the person fails or refuses to choose in the time provided under this section, then the person shall be executed as provided in § 23A-27A-32.

SDCL § 23A-27A-32.1 (emphasis added).

27. At the time that Rhines was convicted and sentenced, in 1993, South Dakota law provided, in pertinent part, that, "The punishment of death shall be inflicted by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch 181.

28. In 2007, the South Dakota Legislature amended the law as follows:

SOUTH DAKOTA 2007 SESSION LAWS
2007 REGULAR SESSION OF THE 82ND LEGISLATURE

Additions are indicated by Text; deletions by
~~Text~~ . Changes in tables are made but not highlighted.

Ch. 151 (HB 1175)
West's No. 101
CAPITAL PUNISHMENT—LETHAL INJECTION—SUBSTANCES

FOR AN ACT ENTITLED, An Act to provide for the substances used in the execution of a sentence of death and to allow the choice of the substances used in an execution under certain circumstances.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF SOUTH DAKOTA:

Section 1. That § 23A-27A-32 be amended to read as follows:

<< SD ST § 23A-27A-32 >>

23A-27A-32. The punishment of death shall be inflicted within the walls of some building at the state penitentiary ~~or within the yard or enclosure adjoining thereto~~ . The punishment of death shall be inflicted by the ~~intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice~~ intravenous injection of a substance or substances in a lethal quantity. The warden, subject to the approval of the secretary of corrections, shall determine the substances and the quantity of substances used for the punishment of death. An execution carried out by ~~lethal~~ intravenous injection shall be performed by a person ~~selected by the warden and~~ trained to administer the injection who is selected by the warden and approved by the secretary of corrections. The person administering the intravenous injection need not be a physician, registered nurse, ~~or~~ licensed practical nurse, or other medical professional licensed or registered under the laws of this or any other state. Any infliction of the punishment of death by ~~administration of the required lethal~~ intravenous injection of a substance or substances in the manner required by this section may not be construed to be the practice of medicine ~~and any~~ . Any pharmacist or pharmaceutical supplier is authorized to dispense the ~~drugs~~ substance or substances used to inflict the punishment of death to the warden without prescription, for carrying out the provisions of this section, notwithstanding any other provision of law.

Section 2. That chapter 23-A-27A be amended by adding thereto a NEW SECTION to read as follows:
Any person convicted of a capital offense or sentenced to death prior to the effective date of this Act may choose to be executed in the manner provided in this Act or in the manner provided by South Dakota law at the time of the person's conviction or sentence. The person shall choose by indicating in writing to the warden not less than seven days prior to the scheduled week of execution the manner of execution chosen. If the person fails or refuses to choose in the time provided under this section, then the person shall be executed as provided in section 1 of this Act.

Approved February 23, 2007.

29. In 2008, the South Dakota Legislature further amended the law as follows:

SOUTH DAKOTA 2008 SESSION LAWS

2008 REGULAR SESSION OF THE 83RD LEGISLATURE

Additions are indicated by Text; deletions by

~~Text~~ . Changes in tables are made but not highlighted.

Ch. 117 (SB 53)

West's No. 244
CAPITAL PUNISHMENT—JUDGES—WARRANTS

FOR AN ACT ENTITLED, An Act to revise certain provisions related to capital punishment.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF SOUTH DAKOTA:

* * * * * * * * * * * * *

<< SD ST § 23A-27A-32 >>

23A-27A-32. The punishment of death shall be inflicted within the walls of some building at the state penitentiary. The punishment of death shall be inflicted by the intravenous injection of a substance or substances in a lethal quantity. The warden, subject to the approval of the secretary of corrections, shall determine the substances and the quantity of substances used for the punishment of death. An execution carried out by intravenous injection shall be performed by ~~a person~~ persons trained to administer the injection who is are selected by the warden and approved by the secretary of corrections. The ~~person~~ persons administering the intravenous injection need not be ~~a physician~~ physicians, registered ~~nurse~~ nurses, licensed practical ~~nurse~~ nurses, or other medical ~~professional~~ professionals licensed or registered under the laws of this or any other state. Any infliction of the punishment of death by intravenous injection of a substance or substances in the manner required by this section may not be construed to be the practice of medicine. Any pharmacist or pharmaceutical supplier is authorized to dispense to the warden the substance or substances used to inflict the punishment of death ~~to the warden~~ without prescription, for carrying out the provisions of this section, notwithstanding any other provision of law.

30. In a Kite-Request Slip dated October 1, 2019, addressed to Defendant Young, Rhines pursuant to SDCL § 23A-27A-32.1, elected the method of execution that was in effect at the time that he was sentenced to death. (A true and correct copy of the October 1, 2019 Kite-Request Slip is attached hereto as Exhibit B.)

31. In an amended Kite-Request Slip dated October 4, 2019, addressed to Defendant Young, Rhines elected the method of execution that was in effect at the time that he was sentenced to death, to wit, "[t]he Two Drug Protocol of a Lethal Dose of An Ultra-Short Acting Barbiturate and

a Chemical Paralytic." (A true and correct copy of the October 4, 2019 Kite-Request Slip is attached hereto as Exhibit C.)

32. As of October 15, 2019, Defendant Young had not responded to Rhines's Kite-Request Slips. On October 15, 2019, attorneys for Rhines, emailed and mailed a letter to Defendant Young, Defendant Ravnsborg, and Paul Swedlund, Assistant Attorney General in the office of the Attorney General, requesting, among other things, confirmation that Rhines's request to be executed by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent would be honored. (A true and correct copy of the October 15, 2019 letter is attached hereto as Exhibit D.)

33. Rhines's attorneys also requested that the Defendants identify which ultra-short-acting barbiturates will be used to execute Mr. Rhines. (*Id.*)

34. On October 17, 2019, Mr. Swedlund, from the office of Defendant Young, emailed attorneys for Rhines a letter stating, "I am in receipt of your letter regarding Mr. Rhines' request for execution pursuant to the combination of drugs provided by statute at the time of his execution. The DOC will follow the law. The ultra-short-acting barbiturate the state intends to use is pentobarbital." (A true and correct copy of the October 17, 2019 letter is attached hereto as Exhibit E.)

35. Upon information and belief, ultra-short-acting barbiturates include sodium methohexital and sodium thiopental.

36. Upon information and belief, pentobarbital is not an ultra-short-acting barbiturate. Nor is it a chemical paralytic agent.

37. Defendants intend to execute Mr. Rhines, in contravention of his statutory right to elect the method of his execution, with pentobarbital, a drug that is not an ultra-short-acting barbiturate. Pentobarbital is not a chemical paralytic agent either.

First Cause of Action—Violation of the Right to Choose the Manner of Execution Provided by Law at the Time of Sentence (Against All Defendants)

38. Rhines incorporates by reference each and every allegation contained in the foregoing paragraphs as if specifically alleged herein.

39. In enacting SDCL § 23A-27A-32.1, the State of South Dakota created and codified a state statutory right that entitles Rhines to be executed in the manner provided by South Dakota law at the time of the Rhines's conviction or sentence. Defendants have a corresponding duty to ensure Rhines can exercise this right.

40. The manner of execution provided by South Dakota law at the time of Rhines's conviction and sentence was, in relevant part, "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch. 181, codified at SDCL § 23A-27A-32 (1984).

41. SL 1984, ch 181 created a right to an execution "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch. 181, codified at SDCL § 23A-27A-32 (1984).

42. Rhines has a right to execution "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." *Id.*

43. Rhines's right to be executed in the manner set forth in SL 1984, ch 181 is codified and protected by SDCL § 23A-27A-32.

44. Rhines has exercised his right to choose the manner set forth in SL 1984, ch 181. Rhines has done so in accordance with the provisions of SDCL § 23A-27A-32.1.

45. Defendants cannot deprive Rhines of his right to be executed in the manner of his choice. Defendants have a duty to ensure Rhines can exercise his right.

46. Defendants assert pentobarbital is an ultra-short-acting barbiturate. (Exh. E.)

47. Upon information and belief, pentobarbital is neither an ultra-short-acting barbiturate nor a chemical paralytic agent.

48. Upon information and belief, ultra-short-acting barbiturates include sodium methohexital and sodium thiopental.

49. By refusing to guarantee that Rhines will be executed in the manner set forth in SL 1984, ch 181, Defendants are depriving Rhines of his state statutory right created and protected by SDCL § 23A-27A-32.1 and SL 1984, ch. 181, codified at SDCL § 23A-27A-32 (1984).

Second Cause of Action– Deprivation of Due Process (Against All Defendants)

50. Rhines incorporates by reference each and every allegation contained in the foregoing paragraphs as if specifically alleged herein.

51. In enacting SDCL § 23A-27A-32.1, the State of South Dakota created life and liberty interests that entitle Rhines to be executed in the manner provided by South Dakota law at the time of the Rhines's conviction or sentence.

52. The manner of execution provided by South Dakota law at the time of Rhines's conviction and sentence was, in relevant part, "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch 181.

53. SL 1984, ch 181 creates protected life and liberty interests in execution "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch 181.

54. Rhines has life and liberty interests in execution "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch 181.

55. Rhines's life and liberty interests in being executed in the manner set forth in SL 1984, ch 181 are protected by the Due Process Clause of the Fourteenth Amendment of the United States Constitution.

56. Rhines's life and liberty interests in being executed in the matter set forth in SL 1984, ch 181 are protected by the Due Process Clause of Article Six, Section 2 of the South Dakota Constitution.

57. By stating their intention to execute Rhines using pentobarbital, which is neither an ultra-short-acting barbiturate nor a chemical paralytic agent, Defendants are deliberately and intentionally depriving Rhines of his life and liberty interests to be executed in the manner of his choice without due process of law.

Third Cause of Action – Injunctive Relief (Against All Defendants)

58. Rhines incorporates by reference each and every allegation contained in the foregoing paragraphs as if specifically alleged herein.

59. Defendants' decision to use pentobarbital to execute Rhines deprives Rhines of his statutory right to be executed using an ultra-short-acting barbiturate. It also deliberately and

intentionally deprives Rhines of his life and liberty interests in being executed using an ultra-short-acting barbiturate without due process of law guaranteed under the United States and South Dakota Constitutions.

60. Rhines has a substantial likelihood of success on the merits of his claims.

61. Rhines will suffer severe and irreparable injury if Defendants are not enjoined from executing Rhines with pentobarbital, in violation of his rights.

62. The interests of justice will be served by the Court ordering that: (a) Defendants are prohibited from executing Rhines with Pentobarbital, and; (b) Defendants are required to execute Rhines "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate", to wit, sodium methohexital or sodium thiopental.

Fourth Cause of Action – Declaratory Judgment (Against All Defendants)

63. Rhines incorporates by reference each and every allegation contained in the foregoing paragraphs as if specifically alleged herein.

64. The Uniform Declaratory Judgment Act, SDCL§ 21-24-1, provides that the "Courts of record within their respective jurisdictions shall have power to declare rights, status, and other legal relations whether or not further relief is or could be claimed. No action or proceeding shall be open to objection on the ground that a declaratory judgment or decree is prayed for. The declaration may be either affirmative or negative in form and effect; and such declaration shall have the force and effect of a final judgment or decree."

65. A valid case or controversy exists between the parties because Defendants intend to execute Rhines in violation of Rhines's statutory and constitutional rights.

66. Rhines seeks a declaration that pentobarbital is not an ultra-short-acting barbiturate.

67. Rhines seeks a declaration that Defendants are enjoined from executing Rhines with pentobarbital.

68. Rhines seeks a declaration that: (a) Defendants are prohibited from executing Rhines with Pentobarbital, and; (b) Defendants are required to execute Rhines "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate", to wit, sodium methohexital or sodium thiopental.

69. Rhines has suffered and will suffer an injury in fact based upon Defendants' deprivation of his statutory and due process rights.

70. There is a causal connection between Rhines's injury and Defendants' conduct.

71. Rhines's injury will be redressed by a judgment declaring that: (a) pentobarbital is neither an ultra-short-acting barbiturate nor a chemical paralytic agent; (b) Defendants are enjoined from executing Rhines with pentobarbital, and (c) Defendants are required to execute Rhines only "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate", to wit, sodium methohexital or sodium thiopental.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for judgment against Defendants as follows:

A. A judgment declaring that: (1) pentobarbital is not an ultra-short-acting barbiturate; (2) Defendants are enjoined from executing Rhines with pentobarbital, and (3) Defendants are required to execute Rhines only "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate", to wit, sodium methohexital or sodium thiopental.

B. A preliminary and permanent injunction ordering that: (1) Rhines's execution is stayed pending adjudication of this action; (2) pentobarbital is not an ultra-short-acting barbiturate; (3) Defendants are enjoined from executing Rhines with pentobarbital, and (4) Defendants are required to execute Rhines only "by the intravenous administration of a

lethal quantity of an ultra-short-acting barbiturate", to wit, sodium methohexital or sodium thiopental.

C. For other and further relief as the court deems proper.

Dated this 22nd day of October, 2019.

BALLARD SPAHR LLP

By: /s/ Daniel R. Fritz

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2015 WL 5827252 (Mont.Dist.) (Trial Order)
District Court of Montana.
First Judicial District Court
Lewis And Clark County

Ronald Allen SMITH and William Gollehon, Plaintiffs,
v.
STATE OF MONTANA, DEPARTMENT OF CORRECTIONS; Director Mike Batista; Warden Leroy Kirkegard; and John Does 1-20, Defendants.

No. BDV-2008-303.
October 6, 2015.

Findings of Fact, Conclusions of Law and Order

Ronald F. Waterman.

Jim Taylor.

Gregory A. Jackson.

Michael Donahoe.

Timothy C. Fox/ C. Mark Fowler/Pamela P. Collins/Jonathan M. Krauss, Robert Stutz.

Jeffrey M. Sherlock, Judge.

INTRODUCTION

*1 Before proceeding, it important to clarify the nature of this case. This Court has not been asked and will not make a determination as to whether lethal injection of the Plaintiffs constitutes cruel and unusual punishment. This case is not about the constitutionality or appropriateness of the death penalty in Montana. This case is not about whether the use of pentobarbital in a lethal injection setting is cruel and unusual or if pentobarbital in the doses contemplated by the State of Montana would produce a painless death. Further, this case is not about the availability of pentobarbital or any other drug. This case is only about whether the drug selected by the Department of Corrections to effectuate the Plaintiffs' lethal injections, pentobarbital, meets the legislatively required classification of being an "ultra-fast acting barbiturate."

This Court rules that pentobarbital is not an ultra-fast-acting barbiturate. The State of Montana will either need to select a barbiturate that is ultra-fast acting to accomplish the execution of Plaintiffs or it will need to modify its statute as will be detailed below.

From the testimony and evidence presented, the Court enters the , following:

FINDINGS OF FACT

Trial in this matter was held on September 2 and 3, 2015. Representing Plaintiffs were Ronald F. Waterman, James Park Taylor, and Gregory A. Jackson. Representing the State of Montana were C. Mark Fowler, Pamela P. Collins, Jonathan M. Krause, and Robert Stutz. The Court received numerous exhibits and heard from two witnesses, Dr. Mark Heath and Dr. R. Lee Evans.

Jurisdiction and venue are proper in this Court.

Plaintiff Ronald Allen Smith, an inmate at Montana State Prison, has been sentenced to death for the killing of two young men in 1982.

Plaintiff William J. Gollehon, an inmate at Montana State Prison, has been sentenced to death for the killing of another inmate at Montana State Prison in 1990.

The Montana Supreme Court has upheld the death sentences of both Plaintiffs. *State v. Smith*, 280 Mont. 158, 931 P.2d 1272 (1996); *State v. Gollehon*, 262 Mont. 1, 864 P.2d 249 (1993).

Session law 1983 Montana Laws chapter 411 enacted lethal injection as an option for the execution of prisoners sentenced to death. That provision introduced the phrase "ultra-fast-acting barbiturate" into Montana Code Annotated § 46-19-103.

As of March 19, 1997, lethal injection became the sole method of execution of a sentence of death.

Montana Code Annotated § 46-19-103(3) provides: "[t]he punishment of death must be inflicted by administration of a continuous, intravenous injection of a lethal quantity of an ultra-fast-acting barbiturate in combination with a chemical paralytic agent until a coroner or deputy coroner pronounces that the defendant is dead."

The current Execution Technical Manual (ETM) was adopted on January 16, 2013. (*See* PL's Ex. 1.) The two-drug protocol is referenced on pages 41, and 50 through 53 of the current ETM. There it is indicated that sodium pentothal and pancuronium bromide will be used in the execution. At page 51, it is indicated that these drugs may be substituted by another drug based on availability. It is specifically provided that pentobarbital with a dosage of 5 gms may be substituted for sodium pentothal. Further, rocuronium bromide with a dosage of 1,000 mgs may be substituted for pancuronium bromide.

*2 The State of Montana is the only state that specifies that the death penalty be accomplished by an "ultra-fast-acting barbiturate." The other states employing the death penalty either specify a particular drug to be used or merely state that execution is to take place by means of lethal injection.

The only issues remaining in this case are what the Montana legislature meant by using the words "ultra-fast-acting barbiturate" in Montana Code Annotated § 46-19-103, and whether pentobarbital is an ultra-fast-acting barbiturate within the meaning of Montana Code Annotated § 46-19-103.

Pentobarbital and thiopental are included in the class of drugs known as barbiturates.

At trial, the first witness was Dr. Mark Heath. His curriculum vitae was received as Plaintiffs Exhibit 8. Dr. Heath is a practicing anesthesiologist in New York at the Columbia Medical Center and also teaches medicine at the Columbia School of Medicine. Dr. Heath is a Board Certified Anesthesiologist and has written extensively on lethal injection. He has testified before various courts and legislatures, and has written articles and book chapters about lethal injection. Dr. Heath has also extensively studied various types of lethal injection, by reviewing witnesses descriptions, execution logs, publications, and electroencephalogram results of people who have been executed by means of lethal injection. All of Dr. Heath's opinions, which will be cited below, were given with a reasonable degree of medical certainty. The bottom line for Dr. Heath is that pentobarbital — the drug selected by the Montana Department of Corrections — is not an ultra-fast-acting barbiturate.

Barbiturates were first created in the 1930s and, as a class, share a certain common core ring of molecules. In general, barbiturates are weak acids that are absorbed and rapidly distributed to all tissues of the human body. Barbiturates are known by their

lipid solubility. Barbiturates possessing more lipid solubility distribute more rapidly to the human brain. The basic core ring of barbiturate molecules has been modified over the years, and those modifications affect how certain barbiturates operate.

Experts speak of "vein-to-brain time," which is the amount of time it takes a barbiturate injected into the blood stream to transit to the human brain. In addition, there is a "blood-brain barrier." This is a grouping of cells and capillaries around the human brain that prevent toxins from entering the brain. Certain modifications to the basic barbiturate structure have allowed a rapid transfer through the blood-brain barrier. According to Dr. Heath, it is often important to have a very quick transition from consciousness to unconsciousness, quickly penetrating the blood-brain barrier, which allows physicians to lake control of a patient's breathing to prevent negative consequences from occurring as a patient enters unconsciousness. According to Dr. Heath, this is the purpose of the development of ultra-fast-acting barbiturates.

Barbiturates are traditionally classified as long-acting (phenobarbital), medium-acting (such as pentobarbital), short-acting (secobarbital), and ultra-short-acting (thiopental). (*See* Test. Dr. Mark Heath; PL's Ex. 4, Margaret Wood, Alistair J.J. Wood, DRUGS AND ANESTHESIA PHARMACOLOGY FOR ANESTHESIOLOGISTS (2d. ed.,Williams & Wilkins); *see also* PL's Ex. 5, Ronald D. Miller, MILLER'S ANESTHESIA, 6th ed. (2005). According to Dr. Heath and MILLER'S ANESTHESIA, the ultra-short-acting drugs are thiopental, methohexital, and thiamylal. By using terms such as short-acting or ultra-short-acting, the classification system refers to the duration of action or how long the barbiturate exercises its control over the human body.

*3 As noted by Dr. Heath, there is another classification of barbiturates which refers to the onset of action of the barbiturate or how soon the maximum effect is felt by the body. According to Dr. Heath, there is a correspondence between the two systems, and the terms ultra-fast and ultra-short refer to the same type of barbiturates, as do the terms fast and short, and as do the terms slow and long. Putting this in a tabular form, we find the following:

1. Ultrafast acting	Ultrashort acting	thiopental, thiamylal, methohexital
2.* Fast acting	Short acting	secobarbital, pentobarbital
3.* Intermediate acting	Intermediate acting	pentobarbital*
4. Slow acting	Long acting	phenobarbital

(*Some systems combine #2 and #3 into one group of intermediate acting drugs) (PL's Rebuttal Expert Disclosure, at 4 (June 25, 2013).) According to Dr. Heath, pentobarbital is either classified "fast," "short," or "intermediate."

Pentobarbital is not used as an anesthetic, according to Dr. Heath, because its effects last too long. Rather, pentobarbital is commonly used in pill form as a treatment for epilepsy and is also used to induce comas in already unconscious patients. Pentobarbital in the doses suggested in Montana's ETM would undoubtedly cause the death of the inmate.

Dr. Heath has used, in a clinical setting, both pentobarbital and thiopental. Dr. Heath has never heard, prior to this case, any reference to pentobarbital being classified as being ultra-fast acting. According to Dr. Heath, the operation of thiopental and pentobarbital is noticeably different. Dr. Heath testified that an administration of thiopental causes a "lights out" effect, where a patient is unable to complete the thought that was in their mind upon the administration of the drug. A patient receiving thiopental would take one or two breaths before the drug exerted its control over the patient. Heath also opined that an individual given pentobarbital would breathe longer, would have various body movements, and would slur words before the pentobarbital took effect. Heath testified that a patient given pentobarbital would physically be able to appreciate the accrual of sleepiness or unconsciousness, while a patient given thiopental would not.

Of significant import to the Court is the manufacturer's insert provided for pentobarbital. (*See* PL's Ex. 7, manufacturer's insert for Nembutal Sodium Solution (the manufacturer's name for pentobarbital).) At page one, the insert states "NEMBUTAL Sodium is a short-acting barbiturate." This comports with the classification stated by Dr. Heath.

Plaintiffs Exhibit 11 contains a compilation of a search engine results completed by Dr. Heath. His research shows that there were 28,600 results produced for a description of thiopental as an ultra-short-acting barbiturate. An additional 42 results were returned for the search phrase of thiopental being an ultra-fast-acting barbiturate. On the other hand, the search engine reported one finding for pentobarbital being an ultra-short-acting barbiturate, and a single finding of pentobarbital being an ultra-fast-acting barbiturate. (PL's Ex. 11, at 3.)

The State produced the testimony of Dr. R. Lee Evans, a doctor of pharmacy and Dean of Pharmacy at Auburn University. In Dr. Evans' original declaration filed in March 2015 and received into evidence as Plaintiffs Exhibit 9, he is "not aware of the origin of the term "ultra-fast acting." (PL's Ex. 9, at 6, ¶ 14.) According to Dr. Evans, pentobarbital could be considered short acting, and thiopental, ultra-short acting. (Id.) Dr. Evans opined that there is no meaningful difference between pentobarbital and thiopental in the time it takes to render a person comatose. (Id., at 7, ¶ 15.) However, Dr. Evans noted that onset of action for pentobarbital is under a minute, while for thiopental, the onset of action could be ten to forty seconds. (Id.)

*4 Until the trial of this action. Dr. Evans had not testified that pentobarbital was an ultra-fast-acting barbiturate. lie did so testify at trial. However, the Court struck that conclusion because it did not comport with his prior discovery responses or declarations filed with the Court. (*See* PL's Exs. 9, 10.) At the trial of this matter, Dr. Evans indicated that the onset of pentobarbital was under one minute. However, on December 10, 2012, Dr. Evans indicated "[thiopental is an onset of about a half to one minute, duration of a little less than 30 minutes. Pentobarbital is onset three to four minutes with a duration that is somewhat longer. That's the primary difference." (PL's Ex. 14, *Pardo v. Palmer*, Case No. 3:12-cv-1328-J-32JBT (M.D. Fl. Dec. 10, 2012), Test. Roswell Lee Evans, Jr., at 68).) This testimony stands in stark contrast to what Dr. Evans stated at the trial this matter.

Dr. Evans pointed out that there is no question that pentobarbital is fast acting. For example, Plaintiffs Exhibit 7 — the package insert for pentobarbital — indicates that "the onset of action ranges from almost immediate...." (PL's Ex. 7, at 2.) See also Defendant's Exhibit L, a TOXNET reference which indicates that the onset of thiopental and pentobarbital is "almost immediate. (Def.'s Ex. L, at 16.) TOXNET is a collection of databases operated by the National Library of Medicine. See also Defendant's Exhibit N, a *Drugs.com* reference which indicates that the onset of pentobarbital is immediate. (Def.'s Ex. N, at 1.) Thus, there is no question that pentobarbital is fast acting. The question remains as to whether it is ultra-fast acting.

Dr. Evans did cite to references that indicate that if the onset of action of a drug is less than a minute, it can be considered ultra-fast acting. (*See.* e.g., PL's Ex. Q, TOXNET reference, at 12; PL's Ex. R, Micromedic reference, at 4 ("ultra-fast acting has an onset of one minute or less.).) The Court notes that at page 1 of Exhibit R, pentobarbital is listed as being "short acting," not ultra-short acting.

These references to pentobarbital being ultra-fast acting are consistent with Dr. Heath's finding *some* sources refer to pentobarbital as being ultra-fast acting. However, that must be compared with the greater weight of authority that indicates that pentobarbital is not in the class of drugs considered to be ultra-fast acting.

Dr. Evans did indicate that, in his opinion, pentobarbital and thiopental are almost identical. Both, in his current opinion, reach maximum effect in less than one minute's time, However, Dr. Evans did acknowledge that thiopental is a little quicker to get to the brain because pentobarbital is not as lipid soluble.

In making its decision, this Court has had to weigh the evidence presented by Dr. Evans versus Dr. Heath. Supporting Dr. Heath's testimony are standard pharmacology for anaesthesiologists text books (PL's Exs. 4, 5) and Dr. Heath's own consistent testimony. Also supporting Dr. Heath's position is the significant research that classifies thiopental as being ultra-short acting

(ultra-fast acting) and not so classifying pentobarbital, except for a few scattered references. (*See* PL's Ex. 11.) Also of utmost import is the manufacturer's insert for pentobarbital (PL's Ex. 7), which classifies pentobarbital as a short-acting barbiturate. Also crucial in this weighing the Court has undertaken is the fact that in the *Pardo v. Palmer* case, in testimony given not three years ago, Dr. Evans testified that pentobarbital's onset of action is three to four minutes as opposed to the less than one minute referred to in his testimony in this case. This is not to in any way insinuate that Dr. Evans is not a credible witness. However, it is a factor when weighing the evidence which shows by a relatively overwhelming nature that, while pentobarbital may operate in a fast nature, it is not ultra-fast as is required to comply with Montana's execution protocol. Thus, through this weighing process, this Court concludes that pentobarbital is not an ultra-fast-acting barbiturate.

*5 From the foregoing Findings of Fact, the Court enters the following:

CONCLUSIONS OF LAW

1. Jurisdiction and venue are proper in this Court.

2. By using the limiting term "ultra" in the phrase "ultra-fast-acting barbiturate" in Montana Code Annotated § 46-19-103(3), the legislature limited the State of Montana to using only drugs in the fastest category of barbiturates, namely thiopental, methohexital, and thiamylal. Under the express terms of the statute, the State of Montana is not allowed to use the "fastest acting barbiturate available," or a "relatively fast-acting barbiturate," only an "ultra-fast-acting barbiturate," meaning drugs from the fastest class of barbiturates.

3. Had the legislature intended to give the State of Montana latitude in what drugs to use, it could have used much more general language in the statute authorizing execution, as many other states have now done. Pentobarbital cannot properly be classified as "ultra-fast-acting," since there is another class of drugs that is faster. Whether those drugs are currently available is not an issue the Court can resolve for the State. The State's remedy is to ask the Legislature to modify the statute to allow the use of pentobarbital or other slower acting drugs.

4. The State of Montana has modified the execution protocol several times during this litigation and has had many opportunities to return to the legislature to modify the language which limits the State of Montana to "ultra-fast-acting barbiturates," but has chosen not to.

5. Courts may not legislate through judicial interpretation of statutes. *Albinger v. Harris*, 2002 MT 118, ¶ 38, 310 Mont 274, 8 P.3d 711 (It is not the province of this court or any other court to assume to legislate by judicial interpretation, and to create in favor of any individual or any class of people an exception to the limitation set by the legislature.). A court cannot second-guess and substitute its judgment for that of the legislature or insert what has been omitted. *State Bar of Mont. v. Krivec*, 193 Mont. 477, 481, 632 P.2d 707, 710 (1981). Indeed, Montana law regarding statutory interpretation begins with Montana Code Annotated § 1-2-101, which states: [i]n the construction of a statute, the office of the judge is simply to ascertain and declare what is in terms or in substance contained therein, not to insert what has been omitted or to omit what has been inserted." In Montana Code Annotated § 46-19-103, the legislature mandates use of an "ultra-fast-acting barbiturate," and the Department of Corrections plan to use a drug which is, without dispute, not classified as an ultra-fast-acting barbiturate. Given these facts, the Court must find an impermissible inconsistency between the legislative mandate and the Department of Corrections' exercise of that mandate. Scrupulous adherence to statutory mandates is especially important here given the gravity of the death penalty. *Accord* *In re Ohio Execution Protocol Litigation*, 840 F. Supp. 2d 1044 (S.D. Ohio 2012).

From the foregoing Findings of Fact and Conclusions of Law, the Court enters the following:

ORDER

*6 The State of Montana is hereby ENJOINED from using the drug pentobarbital in its lethal injection protocol unless and until the statute authorizing lethal injection is modified in conformance with this decision.

DATED this 6 day of October 2015.

<<signature>>

JEFFREY M. SHERLOCK

District Court Judge

pcs: Ronald F. Waterman

Jim Taylor

Gregory A. Jackson

Michael Donahoe

Timothy C. Fox/C. Mark Fowler/Pamela P. Collins/Jonathan M. Krauss, Robert Stutz

End of Document

SOUTH DAKOTA PENITENTIARY

KITE - REQUEST SLIP

October 1, 2019 20

Inmate RHINES, Charles No. 15036

Cell No. A-3-55 Works Pending

Desires an Audience with DARIN YOUNG: Warden: South Dakota State Penitentiary

Give Reason — Private Business Not Sufficient

As per South Dakota Codified Law 23A-27A-32.1, I am hereby notifying you that I have selected the method of execution which was in effect at the time I was sentenced to death:

To: Wit: January 29, 1993

Charles R. Rhines

STATE OF SOUTH DAKOTA
COUNTY OF MINNEHAHA

On October 1, 2019, Charles R. Rhines personally appeared before me, whose Identity I proved on the basis of Incarceration, to be the signer of the above document, and he acknowledged that he signed it.

NOTARY PUBLIC

My Commission Expires: 5/24/20

S E A L

KEITH A. THOMPSON
NOTARY PUBLIC
SOUTH DAKOTA

OFFICER

SECOND ITTERATION, SUPERCEDES ALL OTHERS NOT SO MARKED

SOUTH DAKOTA PENITENTIARY

KITE - REQUEST SLIP

October 4, 2019 20 ____

Inmate RHINES, Charles, R. No. 15036

Cell No. A-3-55 Works Pending

Desires an Audience with DARIN YOUNG: Warden: South Dakota State penitentiary

Give Reason — Private Business Not Sufficient

As per South Dakota Codified Law 23A-27A-32.1, I am hereby notify-you that I have selected the method of execution which was in effect at the time I was sentenced to death on January 29, 1993. To Wit: The Two Drug Protocol of a Lethal Dose of An Ultra-short Acting Barbiturate and a Chemical paralytic agent.

Charles R. Rhines

STATE OF SOUTH DAKOTA
COUNTY OF MINNEHAHA

On October 4, 2019, Charles R. Rhines personally appeared before me, whose Identity I proved on the babsis of Incarceration, to be the signer of the above document, and he acknowledged that he signed it.

S E A L NOTARY PUBLIC

My Commission Expires: 7-17-2024

TAYLOR YOST
SEAL NOTARY PUBLIC SOUTH DAKOTA SEAL
OFFICER
My Commission Expires 7-17-2024

1620-DOC | M - 8

GT GreenbergTraurig

Caroline J. Heller
Tel 212.801.2165
Fax 212.805.9488
hellerc@gtlaw.com

October 15, 2019

VIA EMAIL AND USPS

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Darin Young
1600 North Drive
PO Box 5911
Sioux Falls, South Dakota 57117

paul.swedlund@state.sd.us
Paul Swedlund, Esq.
Assistant Attorney General
1302 East Highway 14, Suite 1
Pierre, South Dakota 57501

Re: Charles Rhines, SDDOC #15036

Dear Warden Young and Mr. Swedlund:

We represent Charles Russell Rhines. As you know, on June 25, 2019, Judge Robert Mandel issued a warrant of execution for Mr. Rhines for between November 3 and November 9, 2019. Pursuant to S.D.C.L. § 23A-27A-32.1, on a Kite-Request Slip dated October 1, 2019 and an amended Kite-Request Slip dated October 4, 2019, Mr. Rhines elected to be executed pursuant to the manner provided by South Dakota law at the time of his sentence; to wit, "by the intravenous administration of a lethal quantity of an ultra-short acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch 181.

We write to request that you confirm Mr. Rhines's request will be honored, and that he will be executed by the intravenous administration of an ultra-short-acting barbiturate. We also request that you identify which one of the three ultra-short-acting barbiturates will be used to execute Mr. Rhines: sodium methohexital; sodium thiamylal, or; sodium thiopental.

Further, with respect to the ultra-short-acting barbiturate that is identified for use in Mr. Rhines's execution, we request that you provide the following information: (1) whether it was manufactured or compounded; (2) if manufactured, the identity of the country, or the State in the United States, from whence it was imported/obtained; (3) if compounded, the date on which any compounding was performed and whether it was performed by a licensed pharmaceutical company or pharmacist; (4) any testing conducted to ensure such drug's or drugs' (including the API) potency, purity, and integrity, including the tests conducted, the date(s) of same, and the results; (5) whether

such testing was performed by a licensed pharmaceutical company, pharmacy, or pharmacist, and whether such pharmaceutical company, pharmacy, or pharmacist has been subject to disciplinary action or cited for violations of state or federal laws or regulations by either state or federal entities; (6) the "beyond use" or "expiration" date of such drug (including the API), and when and how such date(s) was/were established; (7) the date on which any API was ordered and received and how it was stored during transport and since it has been in DOC's possession, and; (8) how the drug has been stored since the time of compounding or importation.

We also request that you confirm a licensed physician will be present at Mr. Rhines's execution to pronounce death.

Please provide this information no later than October 18, 2019 to my email address, hellerc@gtlaw.com. I look forward to your timely response.

Sincerely,

/s/ Caroline J. Heller

Caroline J. Heller
Greenberg Traurig, LLP
200 Park Ave.
New York, New York 10166
Telephone (212) 801-2165
Facsimile (212) 805-9488
hellerc@gtlaw.com

cc: Jason Ravnsborg, Esq. *(via email and U.S. Mail)*
Charles Rhines *(via U.S. Mail)*

STATE OF SOUTH DAKOTA

OFFICE OF ATTORNEY GENERAL
1302 East Highway 14, Suite 1
Pierre, South Dakota 57501-8501
Phone (605) 773-3215
Fax (605) 773-4106
TTY (605) 773-6585
http://atg.sd.gov

JASON R. RAVNSBORG
ATTORNEY GENERAL

CHARLES D. McGUIGAN
CHIEF DEPUTY ATTORNEY GENERAL

October 17, 2019

VIA EMAIL AND USPS

Caroline Heller
GreenbergTraurig, LLP
MetLife Building
200 Park Avenue,
New York NY 10166
hellerc@gtlaw.com

Dear Ms. Heller:

I am in receipt of your letter regarding Mr. Rhines' request for execution pursuant to the combination of drugs provided by statute at the time of his execution. The DOC will follow the law. The ultra-short acting barbiturate the state intends to use is pentobarbital.

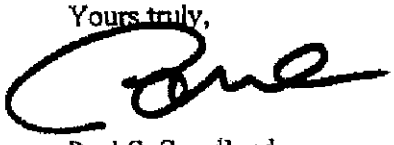
Recent case authorities have quite emphatically and unequivocally stated that "[n]either the 5th, 14th or 1st Amendments afford [inmates] the broad right 'to know where, how and by whom the lethal injection drugs will be manufactured," as well as 'the qualifications of the person or persons who will manufacture the drugs, and who will place the catheters." *Wellons v. Georgia Department of Corrections,* 754 F.3d 1260, 1267 (11th Cir. 2014). Consistent with this authority, with regard to your questions related specifically to the pentobarbital:

(1) The DOC will not disclose whether the drug is "manufactured" or "compounded." The DOC will advise you that the barbiturate is produced for and used by medical practitioners in the United States. Obviously, drugs used in the United States must be produced in an FDA-approved facility according to accepted GMP.
(2) The DOC will not disclose the country or state of origin of the drug.
(3) No drug has yet been compounded and, consistent with past practice, will not be compounded until 24 hours prior to the execution. Per DOC practice, compounding is performed by qualified persons, as demonstrated by past testing and the efficacy of the drugs in the Robert, Moeller and Berget executions.
(4) The DOC will not disclose testing until after the execution.
(5) Per DOC practice, all testing is performed by a qualified independent lab.

(6) The DOC will not disclose any "beyond use" or "expiration" date of the drugs it intends to use as this could identify the source. The DOC will advise you that no drug it intends to use is beyond the "beyond use" or "expiration date" set by the manufacturer.
(7) The DOC will not disclose the date any of its drugs were ordered or received.
(8) All drugs have at all times been stored in accordance with manufacturer instructions while in the DOC's control.

Finally, I can confirm for you that a licensed physician will be present at Mr. Rhines' execution.

Yours truly,



Paul S. Swedlund
Assistant Attorney General

PSS/rar

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	:SS	
COUNTY OF MINNEHAHA	)	SECOND JUDICIAL CIRCUIT

CHARLES RUSSELL RHINES, Plaintiff, v. SOUTH DAKOTA DEPARTMENT OF CORRECTIONS, MIKE LEIDHOLT, SECRETARY, SOUTH DAKOTA DEPARTMENT OF CORRECTIONS, DARIN YOUNG IN HIS CAPACITY AS WARDEN OF THE SOUTH DAKOTA STATE PENITENTIARY, and JASON R. RAVNSBORG IN HIS CAPACITY AS THE ATTORNEY GENERAL FOR THE STATE OF SOUTH DAKOTA, Defendants.	CIV. 19-_____ **THIS IS A CAPITAL CASE EXECUTION SET FOR BETWEEN NOVEMBER 3, 2019 AND NOVEMBER 9, 2019**

APPLICATION FOR A PRELIMINARY INJUNCTION, TEMPORARY RESTRAINING ORDER AND STAY OF EXECUTION

Plaintiff Charles Russell Rhines ("Rhines"), by his counsel of record, hereby submits this Application for a Preliminary Injunction, Temporary Restraining Order, and Stay of Execution pursuant SDCL § 15-6-65(a) and 15-6-65(b) for the following relief: (1) a preliminary injunction with a temporary restraining for such duration as necessary to conclude a hearing on a preliminary injunction order as prayed for in Rhines's Complaint, and; (2) a stay of Rhines's execution week, currently schedule for November 3, 2019-November 9, 2019. In support of this Application, Rhines refers the Court to his Complaint, the Affidavit of Daniel R. Fritz, sworn to October 22, 2019 and the exhibits annexed thereto, the Affidavit of Craig Stevens, Ph.D sworn to October 22, 2019 and the exhibits annexed thereto, and the Memorandum of Law in Support of an Application

for a Preliminary injunction, Temporary Restraining Order and Stay of Execution, all submitted herewith.

Because Defendants will not unduly suffer any damages as a result of this Application, Plaintiff requests the Court waive any written undertaking. If the Court determines an undertaking is necessary, Plaintiff is also prepared to provide a written undertaking to the Court pursuant to SDCL § 15-6-65(c) in the sum the Court determines to be appropriate.

Dated this 22nd day of October, 2019.

BALLARD SPAHR LLP

By: /s/ Daniel R. Fritz

Daniel R. Fritz (2390)
Timothy R. Rahn (4871)
101 South Reid Street, Suite 302
Sioux Falls, SD 57103
Telephone: (605) 978-5200

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Filed: 10/22/2019 4:54 PM CST Minnehaha County, South Dakota 49CIV19-002940

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	:SS	
COUNTY OF MINNEHAHA	)	SECOND JUDICIAL CIRCUIT

CHARLES RUSSELL RHINES, Plaintiff, v. SOUTH DAKOTA DEPARTMENT OF CORRECTIONS, MIKE LEIDHOLT, SECRETARY, SOUTH DAKOTA DEPARTMENT OF CORRECTIONS, DARIN YOUNG IN HIS CAPACITY AS WARDEN OF THE SOUTH DAKOTA STATE PENITENTIARY, and JASON R. RAVNSBORG IN HIS CAPACITY AS THE ATTORNEY GENERAL FOR THE STATE OF SOUTH DAKOTA, Defendants.	CIV. 19-_____ **THIS IS A CAPITAL CASE EXECUTION SET FOR BETWEEN NOVEMBER 3, 2019 AND NOVEMBER 9, 2019**

MEMORANDUM OF LAW IN SUPPORT OF APPLICATION FOR A PRELIMINARY INJUNCTION, TEMPORARY RESTRAINING ORDER AND STAY OF EXECUTION

Plaintiff Charles Russell Rhines ("Rhines") is a prisoner sentenced to death by the State of South Dakota, with an execution warrant setting his execution week as between November 3, 2019 and November 9, 2019. Rhines was sentenced to death on January 29, 1993. Thus, pursuant to Section 23A-27A-32.1 South Dakota Codified Laws, Rhines is entitled to elect to be executed in the manner set forth in South Dakota law at the time of his conviction or sentence. In 1993, South Dakota law provided that the punishment of death "shall be inflicted by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent…." SL 1984, ch 181, codified at SDCL 23A-27A-32 (1984).

In a Kite-Request Slip dated October 1, 2019, addressed to Defendant Darin Young, Warden of the South Dakota State Penitentiary ("Young"), Rhines chose to be executed in the

manner that was in effect at the time that he was sentenced to death. In an amended Kite-Request Slip dated October 4, 2019, addressed to Defendant Young, Rhines reiterated his choice to be executed in the manner that was in effect at the time that he was sentenced to death, to wit, "[t]he Two Drug Protocol of a Lethal Dose of An Ultra-Short Acting Barbiturate and a Chemical Paralytic." On October 15, 2019, attorneys for Rhines, emailed and mailed a letter to Defendants Young and Jason R. Ravnsborg in his capacity as the Attorney General for the State of South Dakota, and Paul Swedlund, Assistant Attorney General, requesting, among other things, confirmation that Rhines's request to be executed by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent would be honored. In a letter dated October 17, 2019, Assistant Attorney General Swedlund advised counsel that he had received "Mr. Rhines' request for execution pursuant to the combination of drugs provided by statute at the time of his execution." Mr. Swedlund noted that "DOC will follow the law." Mr. Swedlund further informed counsel that "[t]he ultra-short-acting barbiturate the state intends to use is pentobarbital."

Pentobarbital is not an ultra-short-acting barbiturate, nor is it a chemical paralytic agent. Defendants' decision to use pentobarbital, contrary to South Dakota law, deprives Rhines of his statutory rights and of his life and liberty interests to be executed in the manner of his choice without due process of law guaranteed under the United States Constitution and the South Dakota Constitution. Thus, Rhines filed an action for injunctive and declaratory relief to enforce his right under South Dakota law to be executed by the manner he chose.

Rhines's execution week is a mere two weeks away. Thus, Rhines now makes this application for a preliminary injunction prohibiting Defendants from executing him with

pentobarbital and ordering that Defendants shall execute Rhines only with an ultra-short-acting barbiturate in combination with a chemical paralytic agent.

Rhines also seeks a stay of execution and temporary restraining order, pending disposition of the application for a preliminary injunction, enjoining Defendants from executing Rhines with pentobarbital. In the alternative, Rhines requests an expedited hearing on Rhines's application for a preliminary injunction so that the Court may rule on the application in advance of the execution week beginning November 3, 2019.

STATEMENT OF FACTS

A. Rhines Asserts His Statutory Right to Be Executed By An Ultra-Short-Acting Barbiturate in Combination with a Chemical Paralytic Agent

Rhines was sentenced to death on January 29, 1993. (Compl. ¶¶ 2, 24.)[1] On June 25, 2019, Judge Robert Mandel granted a warrant of execution, which sets forth that Rhines shall be executed between November 3 and November 9, 2019. (*Id.* ¶ 25.)

Section 23A-27A-32.1 South Dakota Codified Laws provides that:

> Any person convicted of a capital offense or sentenced to death prior to July 1, 2007 may choose to be executed in the manner provided in § 23A-27A-32 ***or in the manner provided by South Dakota law at the time of the person's conviction or sentence***. The person shall choose by indicating in writing to the warden not less than seven days prior to the scheduled week of execution the manner of execution chosen. If the person fails or refuses to choose in the time provided under this section, then the person shall be executed as provided in § 23A-27A-32.

SDCL § 23A-27A-32.1 (emphasis added).

At the time that Rhines was convicted and sentenced, in 1993, South Dakota law provided, in pertinent part, that "[t]he punishment of death shall be inflicted by the intravenous administration of a lethal quantity of an ultra-short-acting acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced

[1] The Complaint is attached to the Affidavit of Daniel R. Fritz, Esq. sworn to October 22, 2019, as Exhibit 1.

dead by a licensed physician according to accepted standards of medical practice. SL 1984, ch 181, codified at SDCL 23A-27A-32 (1984). In 2007, the South Dakota Legislature amended the law as follows:

SOUTH DAKOTA 2007 SESSION LAWS
2007 REGULAR SESSION OF THE 82ND LEGISLATURE

Additions are indicated by Text; deletions by
~~Text~~ . Changes in tables are made but not highlighted.

Ch. 151 (HB 1175)
West's No. 101
CAPITAL PUNISHMENT—LETHAL INJECTION—SUBSTANCES

FOR AN ACT ENTITLED, An Act to provide for the substances used in the execution of a sentence of death and to allow the choice of the substances used in an execution under certain circumstances.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF SOUTH DAKOTA:

Section 1. That § 23A-27A-32 be amended to read as follows:

<< SD ST § 23A-27A-32 >>

23A-27A-32. The punishment of death shall be inflicted within the walls of some building at the state penitentiary ~~or within the yard or enclosure adjoining thereto~~ . The punishment of death shall be inflicted by the ~~intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice~~ intravenous injection of a substance or substances in a lethal quantity. The warden, subject to the approval of the secretary of corrections, shall determine the substances and the quantity of substances used for the punishment of death. An execution carried out by ~~lethal~~ intravenous injection shall be performed by a person ~~selected by the warden and~~ trained to administer the injection who is selected by the warden and approved by the secretary of corrections. The person administering the intravenous injection need not be a physician, registered nurse, or licensed practical nurse, or other medical professional licensed or registered under the laws of this or any other state. Any infliction of the punishment of death by ~~administration of the required lethal~~ intravenous injection of a substance or substances in the manner required by this section may not be construed to be the practice of medicine ~~and any~~ . Any pharmacist or pharmaceutical supplier is authorized to dispense the ~~drugs~~ substance or substances used to inflict the punishment of death to the warden without prescription, for carrying out the provisions of this section, notwithstanding any other provision of law.

Section 2. That chapter 23-A-27A be amended by adding thereto a NEW SECTION to read as follows: Any person convicted of a capital offense or sentenced to death prior to the effective date of this Act may choose to be executed in the manner provided in this Act or in the manner provided by South Dakota law at the time of the person's conviction or sentence. The person shall choose by indicating in writing to the warden not less than seven days prior to the scheduled week of execution the manner of execution chosen. If the person fails or refuses to choose in the time provided under this section, then the person shall be executed as provided in section 1 of this Act.

Approved February 23, 2007.

In 2008, the South Dakota Legislature amended the law as follows:

SOUTH DAKOTA 2008 SESSION LAWS

2008 REGULAR SESSION OF THE 83RD LEGISLATURE

Additions are indicated by Text; deletions by

~~Text~~ . Changes in tables are made but not highlighted.

Ch. 117 (SB 53)

West's No. 244
CAPITAL PUNISHMENT JUDGES WARRANTS

FOR AN ACT ENTITLED, An Act to revise certain provisions related to capital punishment.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF SOUTH DAKOTA:

* * * * * * * * * * * * *

<< SD ST § 23A–27A–32 >>

23A–27A–32. The punishment of death shall be inflicted within the walls of some building at the state penitentiary. The punishment of death shall be inflicted by the intravenous injection of a substance or substances in a lethal quantity. The warden, subject to the approval of the secretary of corrections, shall determine the substances and the quantity of substances used for the punishment of death. An execution carried out by intravenous injection shall be performed by ~~a~~ person persons trained to administer the injection who is are selected by the warden and approved by the secretary of corrections. The ~~person~~ persons administering the intravenous injection need not be ~~a physician~~ physicians, registered ~~nurse~~ nurses, licensed practical ~~nurse~~ nurses, or other medical ~~professional~~ professionals licensed or registered under the laws of this or any other state. Any infliction of the punishment of death by intravenous injection of a substance or substances in the manner required by this section may not be construed to be the practice of medicine. Any pharmacist or pharmaceutical supplier is authorized to dispense to the warden the substance or substances used to inflict the punishment of death ~~to the warden~~ without prescription, for carrying out the provisions of this section, notwithstanding any other provision of law.

Ultra-short-acting acting barbiturates include sodium methohexital and sodium thiopental. (Compl. ¶ 35; Affidavit of Craig Stevens, Ph. D. sworn to October 22, 2019 ["Stevens Aff."] ¶ 7.) In a Kite-Request Slip dated October 1, 2019, addressed to Defendant Young, Rhines, pursuant to SDCL § 23A-27A-32.1, elected the method of execution that was in effect at the time that he was sentenced to death. (Compl. ¶ 30, Exh. B to Compl.) In an amended Kite-Request Slip dated October 4, 2019, addressed to Defendant Young, Rhines specified his election of the method of execution in effect at the time that he was sentenced to death, to wit, "[t]he Two Drug Protocol of

a Lethal Dose of An Ultra-short-acting Acting Barbiturate and a Chemical Paralytic." (Compl. ¶ 31, Exh. C to Compl.) As of October 15, 2019, Defendant Young had not responded to either the October 1 or the October 4 Kite-Request Slips. (Compl. ¶ 32.)

On October 15, 2019, attorneys for Rhines emailed and mailed a letter to Defendant Young, Defendant Ravnsborg, and Swedlund, requesting, among other things, confirmation that Rhines's statutory right to be executed by the intravenous administration of a lethal quantity of an ultra-short-acting acting barbiturate in combination with a chemical paralytic agent would be honored. (Compl. ¶ 32, Exh. D to Compl.) On October 17, 2019, Assistant Attorney General Swedlund advised counsel for Rhines that "[t]he ultra-short acting barbiturate the state intends to use is pentobarbital." (Compl. ¶ 34, Exh. E to Compl.)

B. Pentobarbital is Not An Ultra-Short-Acting Barbiturate

Pentobarbital is neither an ultra-short-acting barbiturate nor a chemical paralytic. (Stevens Aff. ¶¶ 7, 8, 11.) Barbiturates are a drug group that derive from barbituric acid. (*Id.* ¶ 5.) Barbiturates depress the central nervous system and have been used as sedatives and hypnotics for over a century. (*Id.*) Barbiturates are divided into the following classes: ultra-short-acting, short-acting, intermediate-acting, and long-acting. (*Id.*, ¶ 6; *see* Fritz Aff. Exh. 2 p.1.) The classifications refer to the time of onset and duration of the drug effects. (Stevens Aff. ¶ 6.) These classifications are widely accepted in the field of pharmacology. (*Id.*)

Ultra-short-acting barbiturates include sodium methohexital and sodium thiopental. (*Id.* ¶ 7; s*ee* Fritz Aff. Exh. 2 p.2, Exh. 3 p. 13.) Pentobarbital is neither an ultra-short-acting barbiturate nor a chemical paralytic, but rather is classified as a short-acting barbiturate. (Stevens Aff. ¶¶ 8, 11.) Notably, the manufacturer's package insert provided for Nembutal Sodium Solution, which is the manufacturer's name for pentobarbital, states "NEMBUTAL Sodium is a short-acting

barbiturate." (Fritz Exh. 4.) Pentobarbital is not an ultra-short-acting barbiturate and has never been classified as such. (Stevens Aff. ¶ 8.)

Thiopental, the most frequently used ultra-short-acting barbiturate, is used for surgery of short duration. (*Id.* ¶ 9.) The onset of anesthesia is usually within 10 to 30 seconds, because thiopental is so lipid soluble that it rapidly enters the brain. (*Id.*) Conversely, pentobarbital's effects take longer to begin onset and last longer than the effects of ultra-short-acting barbiturates. (*Id.* ¶ 8.)

In pharmacology, chemical paralytic agents are synonymous with neuromuscular blockers. (*Id.* ¶ 10.) Paralytics by themselves do not typically lessen a patient's awareness of pain. (*Id.*) Rather, they inhibit muscle action and thus prevent movement. (*Id.*) They are typically used during surgical procedures in combination with analgesics or anesthetics. (*Id.*) Common chemical paralytic agents include pancuronium bromide and vecuronium. (*Id.*) Pentobarbital is not a chemical paralytic and has never been classified as such. (*Id.* ¶ 11.)

Rhines has a right to be executed in the manner he has chosen: with an *ultra*-short-acting barbiturate, not merely a *short-* or *short-to-intermediate-acting* barbiturate.

C. Rhines Has the Right to Be Executed in the Manner He Has Chosen

Rhines's execution week is now less than two weeks away, yet Defendants have stated their intention, only after inquiries from Rhines's counsel, to execute Rhines with pentobarbital, in violation of his statutory rights, without due process of law, and in violation of his constitutional rights. Accordingly, on October 22, 2019, Rhines filed his Complaint. (*See* Compl.) Rhines alleges four causes of action. The First Cause of Action, Violation of the Right to Choose the Manner of Execution Provided by Law at the Time of Sentence, alleges that, in enacting SDCL § 23A-27A-32.1, the State of South Dakota created a state statutory right that entitles Rhines to be

executed in the manner provided by South Dakota law at the time of the Rhines's conviction or sentence. (Compl. ¶¶ 39-44.) Defendants have a corresponding duty to ensure Rhines can exercise this right. (*Id.* ¶ 45.) The manner of execution provided by South Dakota law at the time of Rhines's conviction and sentence was, in relevant part, "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch 181, codified at SDCL § 23A-27A-32 (1984.) Rhines has exercised his right to choose the manner set forth in SL 1984, ch 181. (Compl. ¶ 44.) Rhines has done so in accordance with the provisions of SDCL § 23A-27A-32.1. (*Id.*) Defendants cannot deprive Rhines of his right to be executed in the manner of his choice. (*Id.* ¶ 45.) Defendants have a duty to ensure Rhines can exercise his right. (*Id.* ¶ 45.) In stating their intention to execute Rhines with pentobarbital, which is neither an ultra-short-acting barbiturate nor a chemical paralytic agent, defendants deprive Rhines of his statutory rights. (*Id.* ¶¶ 47-49.)

The Second Cause of Action, Deprivation of Due Process, alleges that in enacting SDCL § 23A-27A-32.1, the State of South Dakota created life and liberty interests that entitle Rhines to be executed in the manner provided by South Dakota law at the time of the Rhines's conviction or sentence, to wit, by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent. (Compl. ¶¶ 51-54.) Rhines's life and liberty interests in being executed in this manner are protected by the Due Process Clause of the Fourteenth Amendment of the United States Constitution and the Due Process Clause of Article Six, Section 2 of the South Dakota Constitution. (*Id.* ¶¶ 55-56.) By refusing to guarantee that

Rhines will be executed in the manner he has chosen, Defendants are depriving Rhines of his constitutionally protected life and liberty interests without due process of law. (*Id.* ¶ 57.)

The Third Cause of Action, Injunctive Relief, and the Fourth Cause of Action, Declaratory Judgment, seek injunctive and declaratory relief: (1) Staying Rhines's execution pending adjudication of this action; (2) declaring that pentobarbital is neither an ultra-short-acting barbiturate nor a chemical paralytic agent; (3) enjoining Defendants from executing Rhines with pentobarbital; and (4) ordering that Defendants shall execute Rhines only with an ultra-short-acting barbiturate, to wit, sodium methohexital or sodium thiopental, in combination with a chemical paralytic agent. (*Id.* ¶¶ 58-71.)

ARGUMENT

"The recognized purpose of a temporary restraining order is to suspend proceedings until the court can determine whether an injunction should issue." *Golden v. Oahe Enterprises, Inc.*, 90 S.D. 263, 279, 240 N.W.2d 102, 111 (S.D. 1976). "Whether a preliminary injunction should issue involves consideration of (1) the threat of irreparable harm to the movant; (2) the state of the balance between this harm and the injury that granting the injunction will inflict on other parties [sic] litigant; (3) the probability that movant will succeed on the merits; and (4) the public interest." *Dataphase Systems, Inc. v. C L Systems, Inc.*, 640 F.2d 109, 113 (8th Cir. 1981) (en banc); *see also Gross v. Connecticut Mut. Life Ins. Co.*, 361 N.W.2d 259 (S.D. 1985); *Olson v. Cass*, 349 N.W.2d 435 (S.D. 1984). No single factor is determinative in deciding whether to issue a temporary restraining order, and the likelihood that the movant will prevail on the merits must be examined in the context of the relative injuries to the parties and the public. *See Dataphase Systems, Inc.*, 640 F.2d at 113.

Similarly, "[a] stay [of an execution] is an equitable remedy, and '[e]quity must take into consideration the State's strong interest in proceeding with its judgment and ... attempt[s] at manipulation.'" *Nelson v. Campbell*, 541 U.S. 637, 649 (2004) (quoting *Gomez v. United States Dist. Court for Northern Dist. of Cal.*, 503 U.S. 653, 654 (1992) (per curiam)). "Thus, before granting a stay, a district court must consider not only the likelihood of success on the merits and the relative harms to the parties, but also the extent to which the inmate has delayed unnecessarily in bringing the claim." *Id.*, 541 U.S. at 649-50. "Given the State's significant interest in enforcing its criminal judgments... there is a strong equitable presumption against the grant of a stay where a claim could have been brought at such a time as to allow consideration of the merits without requiring entry of a stay." *Id.* (internal citations omitted).

As set forth below, the Court should issue a temporary restraining order and a stay of execution pending a disposition on the application for a preliminary injunction because there is a threat of irreparable harm to Rhines, there is a likelihood that Rhines will succeed on the merits of his case, the harm to the State is minimal, and the balance of equities weighs in favor of the relief sought.

POINT I: <u>Rhines Will Be Irreparably Harmed if the State is Permitted to Proceed with Rhines's Execution Contrary to South Dakota Law</u>

"'Death is a punishment different from all other sanctions in kind rather than degree.'" *Bucklew v. Precythe*, 139 S. Ct. 1112, 1146, 203 L. Ed. 2d 521 (2019) (quoting *Woodson v. North Carolina*, 428 U.S. 280, 303–304 (1976)). "For that reason, the equities in a death penalty case will almost always favor the prisoner so long as he or she can show a reasonable probability of success on the merits." *Id.* (citing *Nken v. Holder*, 556 U.S. 418, 434 (2009) (noting that success on the merits and irreparable injury "are the most critical" factors)); *cf. Glossip v. Gross*, 135 S. Ct. 2726, 2737 (2015) (observing, in a preliminary-injunction posture, that "[t]he parties agree that this

case turns on whether petitioners are able to establish a likelihood of success on the merits" and analyzing the case accordingly); *accord, id.*, at 2792 (SOTOMAYOR, J., dissenting).

Rhines faces execution in two weeks, a punishment that once done cannot be undone. A stay of the execution, and a temporary restraining order enjoining Defendants from proceeding with the execution using pentobarbital, is required to guarantee that Rhines is not deprived of his right to be executed in the manner provided for in South Dakota law and to guarantee Rhines due process of law. Indeed, stay of the execution and a temporary restraining order are required to make Rhines's statutory and due process rights meaningful. *See Battaglia v. Stephens*, 824 F.3d 470, 475 (5th Cir. 2016) (granting stay of execution and finding it was warranted to make indigent capital defendant's right to federally-funded substitute counsel meaningful).

POINT II: Rhines is Likely to Succeed on the Merits of His Complaint

A. Rhines is Likely to Succeed on the Merits of his First Cause of Action

Rhines is likely to succeed on the merits of his cause of action alleging a violation of state statutory law. The plain language of the statutes at issue is clear. In enacting SDCL § 23A-27A-32.1, the State of South Dakota created a right that entitles Rhines to be executed in the manner provided by South Dakota law at the time of the Rhines's conviction or sentence. *See* SDCL § 23A-27A-32.1. The South Dakota Legislature enacted this provision in February of 2007 and made no changes to it when the Legislature amended portions of § 23A-27A-32 in 2008.

At the time that Rhines was convicted and sentenced, in 1993, South Dakota law provided, in pertinent part, and unequivocally, that "[t]he punishment of death ***shall*** be inflicted by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL

1984, ch 181, codified at SDCL § 23A-27A-32 (1984) (emphasis added). The statute allows no discretion in the manner of execution, but rather gives specific directives as to the manner of execution. Accordingly, SDCL § 23A-27A-32.1 and SL 1984, ch 181 create a protected right to an execution "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch 181.

Pursuant to the SDCL § 23A-27A-32.1, Rhines shall be executed in this manner if he "choose[s] by indicating in writing to the warden not less than seven days prior to the scheduled week of execution the manner of execution chosen." SDCL § 23A-27A-32.1. Rhines did chose to be executed in this manner—more than 4 weeks prior to his week of execution—in a written Kite-Request Slip dated October 1, 2019, addressed to Defendant Young, and in amended written Kite-Request Slip dated October 4, 2019, addressed to Defendant Young. (Compl. ¶¶ 30, 31, Exhibits B, C to the Compl.) Based upon the foregoing, Rhines has demonstrated that he has a right to be executed in the manner he has chosen arising from South Dakota Codified Law.

Defendants cannot deprive Rhines of his right to be executed in the manner of his choice. Defendants have a duty to ensure Rhines can exercise his right. Defendants, however, have taken the position that pentobarbital is an ultra-short-acting barbiturate. (Compl ¶ 34, Exh. E to the Compl.) Defendants' assertion is erroneous. Pentobarbital is not an ultra-short-acting barbiturate. (Compl ¶ 36; Stevens Aff ¶¶ 7, 8.) Ultra-short-acting barbiturates include sodium methohexital and sodium thiopental. (Compl ¶ 35; Stevens Aff ¶ 7.) The statute's plain language requires that the Defendants use one of these two ultra-short-acting barbiturates for the execution. By refusing to guarantee that Rhines will be executed in the manner set forth in SL 1984, ch 181, Defendants

are depriving Rhines of his state statutory right codified and protected by SDCL § 23A-27A-32.1 and SL 1984, ch 181.

This case is analogous to *Smith v. State of Montana, Department of Corrections*, No. BDV-2008-303, 2015 WL 5827252 (Mont. Dist. Oct. 6, 2015) (Exh. A to the Compl.). In *Smith*, the Court addressed a similar Montana law that provided "[t]he punishment of death must be inflicted by administration of a continuous, intravenous injection of a lethal quantity of an ultra-fast-acting barbiturate in combination with a chemical paralytic agent until a coroner or deputy coroner pronounces that the defendant is dead." *Id.* at *1. However, the State of Montana intended to execute Smith using pentobarbital, which, Smith argued, is not an ultra-short-acting barbiturate. *Id.* After a trial, the court concluded, among other things, that pentobarbital is not an ultra-fast-acting barbiturate and enjoined the State of Montana from executing Smith using pentobarbital. *Id.* at *6.

The Montana statute at issue in *Smith* and SL 1984, ch 181 are nearly verbatim. The evidence presented by Rhines demonstrates, as was demonstrated in *Smith*, that pentobarbital is not an ultra-short-acting barbiturate. Thus, just as Smith succeeded on the merits of his claims, Rhines is likely to succeed on the merits of his as well.

B. Rhines is Likely to Succeed on the Merits of his Second Cause of Action

Rhines is likely to succeed on the merits of his cause of action alleging deprivation of due process. "Procedural due process constrains government decisions 'which deprive individuals of 'liberty' or 'property' interests within the meaning of the Due Process Clause of the Fifth or Fourteenth Amendment.'" *Kroupa v. Nielsen*, 731 F.3d 813, 818 (8th Cir. 2013) (quoting *Mathews v. Eldridge*, 424 U.S. 319, 332 (1976)). "'To establish a procedural due process violation, a plaintiff must demonstrate that he has a protected property or liberty interest at stake and that he

was deprived of that interest without due process of law.'" *Osloond v. Farrier*, 659 N.W.2d 20, 24 (S.D. 2003) (quoting *Hopkins v. Saunders*, 199 F.3d 968, 975 (8th Cir. 1999) (citation omitted)). "[S]tate law may create a 'liberty interest' protected by the Fourteenth Amendment... [i]f, for example, a state statute gives 'specific directives to the decision maker that if the [statute's] substantive predicates are present, a particular outcome must follow,' a 'liberty interest' protected by the Fourteenth Amendment is created." *Bagley v. Rogerson*, 5 F.3d 325, 328 (8th Cir. 1993) (quoting *Kentucky Department of Corrections v. Thompson*, 490 U.S. 454, 463 (1989)); *see Hicks v. Oklahoma*, 447 U.S. 343, 346 (1980) (Oklahoma statute providing jury could impose a sentence of no fewer than 10 years in prison created a liberty interest protected by the 14th Amendment in defendant having the jury apply that sentence). To constitute a due process violation, the individual must have been deprived of this right by a state actor. *See Osloond v. Farrier*, 659 N.W.2d 20, 24 (S.D. 2003); *DeShaney v. Winnebago County Dep't of Soc. Servs.*, 489 U.S. 189, 195, (1989).

Here, in enacting SDCL § 23A-27A-32.1, the State of South Dakota created life and liberty interests that entitle Rhines to be executed in the manner provided by South Dakota law at the time of the Rhines's conviction or sentence. *See* SDCL § 23A-27A-32.1. The South Dakota Legislature enacted this provision in February of 2007 and made no changes to it when the Legislature amended portions of § 23A-27A-32 in 2008.

At the time that Rhines was convicted and sentenced, in 1993, South Dakota law provided, in pertinent part, and unequivocally, that "[t]he punishment of death ***shall*** be inflicted by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL

1984, ch.181 (emphasis added). The statute allows no discretion in the manner of execution, but rather gives specific directives as to the manner of execution. *See Bagley*, 5 F.3d at 328. Accordingly, SDCL § 23A-27A-32.1 and SL 1984, ch.181 create protected life and liberty interests in execution "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch.181.

As set forth in Point I, *supra*, South Dakota Codified Law mandates that Rhines shall be executed in this manner if he chooses it more than seven days before his execution week, which he did. (Compl. ¶¶ 30, 31, Exhibits B, C to the Compl.) Based upon the foregoing, Rhines has demonstrated that he has protected life and liberty interests in being executed in the manner he has chosen arising from South Dakota Codified Law. *See Osloond*, 659 N.W.2d at 24.

Defendants, State actors, cannot deprive Rhines of his life and liberty interests without due process of law to which he is entitled under the due process clauses of the Fourteenth Amendment of the United States Constitution and Article Six, Section 2 of the South Dakota Constitution. *See* U.S. Const. amend. XIV, § 1; S.D. Const. art. XI, § 2. Pentobarbital is neither an ultra-short-acting barbiturate nor a chemical paralytic. (Compl ¶ 36; Stevens Aff. ¶¶ 7, 8, 11.) Ultra-short-acting barbiturates include sodium methohexital and sodium thiopental. (Compl ¶ 35; Stevens Aff. ¶ 7.) By stating that Rhines will be executed using pentobarbital, which is not an ultra-short-acting barbiturate, Defendants are deliberately and intentionally depriving Rhines of his constitutionally protected life and liberty interests without due process of law. Based upon the foregoing, Rhines is likely to succeed on the merits of his Second Cause of Action.

POINT III: The Balance of Harms and Public Interest Favors Granting the Relief Sought By Rhines, Who Has Not Delayed in Brining His Action

As set forth above, Rhines will suffer irreparable injury without a stay and temporary restraining order pending disposition of his application for a preliminary injunction. Conversely, the harm to Defendants is a minimal incremental delay and the administrative inconvenience of seeking another execution warrant. Thus, the balance of harms weighs in favor of granting the stay and temporary restraining order.

Further, Rhines has timely filed his action and this application. South Dakota law provides that he may elect to be executed in the manner provided by South Dakota law at the time of his sentence and that he shall choose by indicating in writing to Defendant Young not less than seven days prior to the scheduled week of execution the manner of execution chosen. SDCL § 23A-27A-32.1. Rhines exercised his right to elect the manner of execution by submitting a Kite-Request Slip to Warden Young on October 1, 2019, 32 days prior to Rhines's scheduled week of execution, and then by submitting an amended Kite-Request Slip on October 4, 2019, 29 days prior to Rhines's scheduled week of execution. (Compl. ¶¶ 30, 31, Exhs. B, C to the Compl.) The Warden did not respond to either of Rhines's Kit-Request Slips. (Compl. ¶ 32.) On October 15, 2019, 18 days before Rhines's scheduled week of execution, his attorneys wrote a letter to Defendant Young, Defendant Ravnsborg, and Swedlund, requesting confirmation that Defendants would comply with Rhines's rights. (Compl. ¶ 32, Exh. D to the Compl.) On October 17, 2019, more than two weeks after Rhines submitted his first Kite-Request Slip, Defendants responded by letter to counsel for Mr. Rhines. (Compl. ¶ 34, Exh. E to the Compl.) Defendants conceded that Mr. Rhines had the statutory right to elect the execution procedure available at the time of his sentence and conviction: administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent. (*Id.*) Defendants claim that they will follow the law,

and abide by Mr. Rhines' choice. (*Id.*) Defendants informed Mr. Rhines, however, that they intend to execute him using pentobarbital. (*Id.*) Pentobarbital is neither an ultra-short-acting barbiturate nor a chemical paralytic agent. (Compl ¶ 36; Stevens Aff. ¶¶ 7, 8, 11.) Rhines filed his action and this application as soon as practicable after learning from Defendants that they intend to execute him in a manner that contradicts the law.

Further, a stay, temporary restraining order, and injunction are in the public interest. There is a "public interest in preventing unconstitutional executions." *Kindler v. Horn*, 642 F.3d 398, 406 (3d Cir. 2011). Indeed, there can be no negative impact on the public from an injunction mandating compliance with laws designed to serve the public and guaranteeing compliance with South Dakota law is serving the public interest.

CONCLUSION

For all the reasons set forth above, Rhines respectfully requests that the Court set this matter for a hearing on the preliminary injunction, grant a stay of execution, and issue a temporary restraining order ordering that: (1) pentobarbital is neither an ultra-short-acting barbiturate nor a chemical paralytic agent; (2) Defendants are enjoined from executing Rhines with pentobarbital, and (3) Defendants shall execute Rhines only with an ultra-short-acting barbiturate (such as sodium methohexital or sodium thiopental) in combination with a chemical paralytic agent. In the alternative, Rhines requests an expedited hearing on Rhines's application for a preliminary injunction so that the Court may rule on the application in advance of the execution week beginning November 3, 2019.

Dated this 22nd day of October, 2019.

BALLARD SPAHR LLP

By: /s/ Daniel R. Fritz

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AFFIDAVIT OF CRAIG W. STEVENS, Ph.D.

I, Craig W. Stevens, Ph.D., do hereby affirm and attest under penalty of perjury:

1. I am a full-time faculty member in the department of Pharmacology and Physiology at the College of Osteopathic Medicine, a unit of Oklahoma State University, Center for Health Sciences campus in Tulsa, Oklahoma. After receiving my Ph.D. in Pharmacology from the Mayo Clinic, in Rochester, Minnesota, I completed a 2-year postdoctoral fellowship at the University of Minnesota Medical School in Minneapolis, Minnesota, and secured a position as an Assistant Professor of Pharmacology with my present employer in 1990. I advanced through the academic ranks to Associate Professor of Pharmacology in 1993, and Professor of Pharmacology in 2000.

2. Besides my regular duties of teaching medical students, pursuing research and scholarly activities, and serving on college committees, I work part-time as a litigation consultant/expert witness on cases involving pharmacological issues. I have consulted in both civil and criminal cases, working with both the prosecution or plaintiff and the defendant. With regard to the pharmacological issues of lethal injection, I have worked as a consultant with the state as well as with attorneys representing condemned inmates.

3. I have been retained by counsel for Charles Rhines. Counsel have asked me to provide the Court with information regarding the classification and function of various pharmacological drugs.

4. I have reviewed the following materials in preparing this Affidavit: the South Dakota statute "Place and manner of execution – Qualifications to perform – Exemptions," 1993 S.D. Codified Laws § 23A-27A-32; Letter from Paul Swedlund, Assistant Attorney General, to Caroline Heller, dated October 17, 2019; Research Issues 26, Guide to Drug Abuse Research Terminology; Harwood Nuss' Clinical Practice of Emergency Medicine, Sixth Edition, October 2014 Update; Nembutal Sodium Solution (pentobarbital sodium injection) label; Poisoning and Drug Overdose, 6th Edition, Chapter 28 Barbiturates, Timothy E. Albertson, and Pentobarbital, Thomas E. Kearney; Pharmacology of Intravenous Sedative/Anesthetic Medications Used in Oral Surgery, Joseph A. Giovannatti Jr.; Pharmocakinetics of Methohexital and Thiopental in Surgical Patients, Robert J. Hudson, et al.; Brevital Sodium Methohexital Sodium for Injection Label; Use of Ultrashort-Acting Hypnotic Agents in Emergency Departments, Western Journal of Medicine, 1996, Michael S. Schneider and Wendy C. Coates; The Relative Potencies of Methohexitone and Thiopentone, Journal of Anesthesia, Volume 22, 1967, E.T. Thomas.

5. Barbiturates are a drug group that derive from barbituric acid. Barbiturates depress the central nervous system and have been used as sedatives and hypnotics for over a century.

6. Barbiturates are divided into the following classes: ultra-short-acting, short-acting, intermediate-acting, and long-acting. The classifications refer to the time of onset and duration of the drug effects. These classifications are widely accepted in the field of pharmacology.

CWS

7. I am aware of two ultra-short-acting barbiturates: sodium thiopental and methohexital. Short-acting barbiturates include pentobarbital and secobarbital. Intermediate-acting barbiturates include amobarbital and butabarbital. Long-acting barbiturates include phenobarbital and mephobarbital.

8. As indicated above, pentobarbital is not an ultra-short-acting barbiturate and has never been classified as such. Its effects take longer to begin onset and last longer than the effects of ultra-short-acting barbiturates.

9. Thiopental, the most frequently used ultra-short-acting barbiturate, is used for surgery of short duration. The onset of anesthesia is usually within 10 to 30 seconds, because thiopental is so lipid soluble that it rapidly enters the brain.

10. In pharmacology, chemical paralytic agents are synonymous with neuromuscular blockers. Paralytics by themselves do not typically lessen a patient's awareness of pain. Rather, they inhibit muscle action and thus prevent movement. They are typically used during surgical procedures in combination with analgesics or anesthetics. Common chemical paralytic agents include pancuronium bromide and vecuronium.

11. Pentobarbital is not a chemical paralytic and has never been classified as such.

12. Attached hereto is my curriculum vitae.

I hereby certify that the facts set forth above are true and correct to the best of my personal knowledge, information, and belief, subject to the penalty of perjury.

Craig W. Stevens, Ph.D.

10-22-19
Date

STATE OF OKLAHOMA)
) SS
COUNTY OF TULSA)

Subscribed and sworn to before me this 22 day of October, 2019.

TAMMY CAGLE NOTARY PUBLIC No. 09000270 EXP. 1/08/2021 IN AND FOR STATE OF OKLAHOMA

Tammy Cagle
NOTARY PUBLIC

My Commission Expires January 08, 2021

CURRICULUM VITAE

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PROFESSIONAL APPOINTMENTS

2000-present	**Professor of Pharmacology**, OSU-College of Osteopathic Med.,CHS, Tulsa, OK
2012-2018	**Chair,** Coalition Against Prescription and Substance Abuse of Tulsa (CAPSAT)
2007-2009	**Chair,** Dept. of Pharmacology/Physiology, OSU-CHS, Tulsa, OK
1993-2000	**Associate Professor of Pharmacology**, Dept. of Pharmacology/Physiology, OSU-CHS, Tulsa, OK
1990-1993	**Assistant Professor of Pharmacology**, Dept. of Pharmacology/Physiology, OSU-CHS, Tulsa, OK
1989-1990	**Development Manager**, Minnesota Academy of Science, St. Paul, MN
1984-1986	**President** (*founding*), Mayo Graduate Students Association, Mayo Grad. Schl Med., Rochester MN

EDUCATION AND TRAINING

2005	**Molecular Biology and PCR Course,** Smith College/New England Biolabs, Northampton, Massachusetts
1988-1990	**Postdoctoral Research Fellow**, Dept. of Cell Biology and Neuroanatomy, Univ. of Minnesota, Minneapolis, MN. Supervisor: *Dr. Virginia Seybold*
1984-1988	Mayo Graduate School of Medicine, Rochester, MN, **Ph.D. in Pharmacology**. Thesis: *Behavioral and Biochemical Characteristics of Opioid Tolerance in Rat Spinal Cord.* Supervisor: *Dr. Tony L. Yaksh*
1981-1984	University of Illinois, Chicago, IL; **M.S. in Biological Sciences**. Thesis: *Endogenous Opioid Systems in Amphibians.* Supervisor: *Dr. Paul D. Pezalla*
1978-1981	**American Peace Corps in Nepal**; Science/Math Instructor, *Katmandu, NEPAL*
1974-1978	Augustana College, Rock Is., IL; **B.A. in Biology,** ***cum laude***

EXTRAMURAL FUNDING

2010-2014	*"Novel Opioid Action at Toll-Like Receptors"*, Oklahoma Center for the Advancement of Science and Technology (**OCAST**) C.W. Stevens, (PI), $126,090 (direct costs)
2007-2011	*"Functional Evolution of Opioid Receptors"*, **NIH NIDA AREA Grant**, R15DA12448, C.W. Stevens (PI), $150,000 (direct costs) (no-cost extension for 2011)
2004-2007	*"Functional Evolution of Opioid Receptors"*, **NIH NIDA AREA Grant**, R15DA12448, C.W. Stevens (PI), $100,000 (direct costs)
2002-2004	*"Sequence and Pharmacology of Novel Opioid Receptors"*, Oklahoma Center for the Advancement of Science and Technology (**OCAST**) C.W. Stevens, (PI), $68,264 (direct costs)
2001-2003	*"Functional Evolution of Opioid Receptors"*, **NIH NIDA AREA** (Academic Research Enhancement Award) Grant, R15DA12448, C.W. Stevens (PI), $100,000 (direct costs)
1999-2001	*"Functional Evolution of Opioid Receptors"*, **NIH NIDA AREA** (Academic Research Enhancement Award) Grant, R15DA12448, C.W. Stevens (PI), $69,605 (direct costs)
1998-1999	*"Testing and Comparison of Analgesic Agents"*, American College of Laboratory Animal Medicine (**ACLAM**), C.W. Stevens (PI), $11,555 (direct costs)
1995-1997	*"Graduate Student Research"*, **Gardner Spring, Co.**, *Tulsa, OK* ($4,000)
1994-1996	**NRSA postdoctoral grant** for Dr. Stan Willenbring, C.W. Stevens (sponsor).
1992-1998	*"Studies of Opioid Analgesia in Amphibians"*, **NIH-NIDA First Award** (DA07326), C.W. Stevens, Principal Investigator (PI), $418,000. (direct costs) (no-cost extension for 1998)
1992-1995	*"Spinal Sites of Endogenous Opioid Action in Amphibians"*, Research Grant, **Whitehall Foundation**, C.W. Stevens, PI, $70, 785.
1991-1992	*"Nociceptive Processing in the Amphibian Spinal Cord"*, Grants-In-Aid, **Whitehall Foundation**, C. W. Stevens, PI, $10,375.
1988-1990	**NIDA Neuroscience Training Grant**, Postdoctoral position, Dept. of Cell Biology and Neuroanatomy, University of Minnesota Medical School, Minneapolis, MN
1987-1988	*"Issues related to tolerance development and tissue toxicology of chronically administered 4-anilinopiperidines"*, T.L. Yaksh (PI) and C.W. Stevens (Co-I). **Janssen Pharm.**, $46,000.
1985-1986	*"Effects of capsaicinoid agents on peptide levels and behavioral function"*, T.L. Yaksh (PI) and C.W. Stevens (Co-I). **Procter and Gamble Co.**, $25,000.
1985-1986	*"Effects of drugs on the shock titration threshold in the primate"*, T.L. Yaksh (PI) and C.W. Stevens (Co-I). $10,000, **Sterling Winthrop Pharmaceuticals**.

TEACHING EXPERIENCE

1990-2014	Lecturer, *Medical Pharmacology I-II*, (Course-Coordinator 1997-2007) OSU-CHS, COM, Tulsa, OK
2009-2013	Instructor, *Receptors II* (graduate course, alternate years) OSU-CHS, COM, Tulsa, OK
1997-2009	Instructor, *Neuropharmacology* (graduate course, alternate years) OSU-CHS, COM, Tulsa, OK
1991-2009	Facilitator, *Medical Information Systems Course*, OSU-CHS, COM, Tulsa, OK
2000-2004	Visiting Professor, Neuroscience Lab Course, U of MN Medical School, Minneapolis, MN
1998-2001	Adjunct Professor of Pharmacology, University of Tulsa Nursing School, Tulsa, OK
1989-1990	Lecturer, *Pharmacology for Nurse Anesthetists*, University of Minnesota, Minneapolis, MN
1989-1990	Lecturer, *Neuropharmacology Course*, Dept. of Neurology, Univ. of MN, Minneapolis, MN
1984-1987	Community Education, *Juggling Instructor*, Rochester, MN
1984-1987	IBM-PC Instructor, *Microcomputer Education Cntr.*, Mayo Clinic, Rochester, MN
1981-1983	Teaching Assistant; *Dept. of Biological Sciences*, University of IL at Chicago, IL

ACADEMIC COMMITTEES

2011	*Member,* Honorary Degree Committee, OSU-Stillwater
2010-2012	*Secretary,* Group 6 of the Graduate College, OSU-Stillwater
2004	*Member,* Research and Creative Activities Task Force, OSU-System, appt. by OSU President Schmidly
2003	*Member,* Search Committee for VP Health Affairs OSU/Dean OSU-COM
2002-2003	*President,* Faculty Senate
2002-2003	*Member,* Board of Directors for Academic Health Center, joint affiliation of TRMC and OSU-CHS
2001-2002	*Vice-President* Faculty Senate
1994-2001	*Founding Member & Chair (2000-2001)*, Biomedical Sciences Graduate Committee
1996-2001	*Chair,* Hazardous Materials and Equipment
1994-98, 2000-16	*Member, Chair (2001-2004; 2006-2007;2010-2013)* OSU-CHS Promotion and Tenure Committee
1996-1998, 2009	*Senator,* Faculty Senate
1991-2000, 2006	*Member, (Chair, 2006)* Research Committee
1991-92, 2002-04	*Member, (Chair, 2002-2004)* Academic Appeals Board
1991-1992	*Member,* Learning Resources Committee
1990-1999	*Chair (1990-1993), Member (1994-1999)*, Animal Use Committee (IACUC)

PROFESSIONAL SOCIETY MEMBERSHIPS

International Narcotics Research Conference (INRC, member of Executive Committee)
American Society for Pharmacology and Experimental Therapeutics (ASPET)
Society for Neuroscience (SFN), American Association for the Advancement of Science (AAAS)
Committee on Problems of Drug Dependence (CPDD)

HONORS AND AWARDS

2006	Regents Research Award, Inaugural awardee for OSU-Center for Health Sciences
1992	Young Investigator Travel Award, American Pain Society, San Diego, CA
1992	NIDA Travel Award, International Narcotics Res. Comm. (INRC), Keystone, CO
1991	Young Investigator Travel Award, American Pain Society, New Orleans, LA
1991	Young Scientist Travel Award, ASPET Annual Meeting, San Diego, CA
1990	Fulbright Scholarship for Research & Teaching in India *(declined to accept faculty position)*
1990	CPDD Travel Award, CPDD Annual Meeting, Keystone, CO
1989	NIDA Travel Award, CPDD Annual Meeting, Keystone, CO
1987	Upjohn Travel Award, ASPET Annual Meeting, Honolulu, HA
1987	NIDA Training Grant, Gordon Research Conference, *"Mode of Action of Opiates"*, CA
1983	UIC Research Assistantship, University of Illinois, Chicago, IL
1983	NIH Training Grant, *"Neural Systems & Behavior"*, MBL Summer course, Woods Hole, MA
1982	UIC Research Board Travel Grant, *"Strategies for studying the role of peptides in neuronal function"*, Society for Neuroscience Short Course, Minneapolis, MN

GRADUATE TRAINING ACTIVITIES

1997-2000	Chair/Major Advisor to Leslie C. Newman (Ph.D. student, completed 8/2000 with university-wide honors).
1998-2005	Member, Advisory Committee for John Paulson (Ph.D. student, completed 8/2005)
2001-2005	Chair, Advisory Committee for Eva Garringer (Ph.D. student, completed 5/2005)
2002-2004	Member, Advisory Committee for Randy Benton (M.S. student; completed 5/2004)
2002-2004	Member, Advisory Committee for Raju N. Kacham (M.S. student at OSU-CVHS, Stillwater; completed 5/2004)
2001-2007	Chair/Major Advisor to Kristin K. Martin (M.S. student; completed 5/2007)

GRADUATE TRAINING ACTIVITIES (CONT.)

2003-2008 Chair/Major Advisor to Christopher M. Brasel (Ph.D. student, completed 5/2008)
2004-2008 Chair/Major Advisor to Shekher Mohan (Ph.D. student, completed 12/2008)
2005-2008 Chair/Major Advisor to Julie Duffey (M.S. student, completed M.S. degree 5/2008)
2007-2009 Member, Advisory Committee for Danielle Armstrong (M.S. student, completed M.S. 7/2009)
2006-2011 Member, Advisory Committee for Neda Saffarian-Toussi (Ph.D. student, Ph.D. awarded May, 2011)
2007-2011 Member, Advisory Committee for Arunkumar Thangaraju (Ph.D. student, Ph.D. awarded Dec., 2011)
2008-2011 Chair/Major Advisor to Shruthi Aravind (M.S. student, M.S. awarded May 2011)
2010-2013 Chair/Major Advisor to Larry Johnston (D.O./M.S. student)
2009-2013 Chair/Major Advisor to John Knox (D.O./M.S. student)
2011-2015 Chair/Major Advisor to Summer Dodson (Ph.D. degree awarded Summer, 2015)
2011- Member, Advisory Committee for Leandra Figueroa (Ph.D. student)

GRANT STUDY SECTIONS

Reviewer for NIH grants, Special Emphasis Pain Study Sections (1998-present)
Grant consultant for the AAAS, Univ of Michigan, Centers of Research Excellence project (2003)
Grant Reviewer for National Science Foundation (1996-2002)
Grant Reviewer for the Veterans Administration (1995- present)
Chair (1999), Member (1997) Biological Sciences Panel, Texas State Granting Program-Advanced Research Proposals
Grant Reviewer (2008) for Neuroscience and Mental Health Grants, The Wellcome Trust

EDITORIAL & ADVISORY BOARDS/PEER-REVIEWER FOR THE FOLLOWING SCIENTIFIC JOURNALS

Peer-Reviewer for: *J. Pharmacol. Exp. Ther., Brain Research, Life Sciences, Neuroscience Letters, Eur. J. Pharmacology, J. Neuroscience, Pain, American Journal of Physiology, Journal of Pain, Laboratory Animals*
Editorial Advisory Board, *Pharmacology Online* (Italy), Editor: Anna Capasso.
Editorial Advisory Board, *Computational Biology and Chemistry: Advances and Applications*, Editor: Bruno Villoutreix
Advisory Board Member, Tobacco-Free Zone, Tulsa, OK
Consultant, Reuters News Service, Insight Service

COMPUTER CONSULTING

SigmaPlot for Windows, β-tester, Jandel Scientific, CA, 1992-1999.
Reference Manager for Windows, β-tester, Research Information Systems, Inc., CA, 1993-1999.
Institute for Scientific Information (ISI), focus group meeting, San Francisco, CA, April, 1998.
Knowledge Acquisition Consultant for Ingenuity.com (2001).
β-tester for JPET Online Review and Submission website (2001).

COMMUNITY SCIENCE INITIATIVES

Science Fair Judge at School (Carver and Elliot) and Regional (Tulsa County) Level, 1990-2010.
Institutional Representative for the Tulsa Biological and Clinical Research Alliance (TBCRA), 1998-2001
Science Enrichment for University of Tulsa- Gifted School, 1998-present, also at Trinity Episcopalian Day School.
Faculty Participant in High School Ambassador Program at OSU-CHS, 1994-2000
Workshop participant in "Speaking out for Science", sponsored by AAAS, March 28, 2009.
Member, Oklahomans for Excellence in Science Education.

VISITING SCIENTIST/RESEARCH CONSULTANT/OUTSIDE COLLABORATION

1994 Laboratory of Tony L. Yaksh, Ph.D., Vice Chair for Research, Dept. of Anesthesiology, UCSD, La Jolla, CA. Project entailed characterization of met-enkephalin extended sequences in *Rana pipiens* and presentation to research group.
1996 Laboratory of George Wilcox, Ph.D., Professor of Pharmacology, University of Minnesota Medical School, Minneapolis, MN. Training of intrathecal catheterization to research group and general lab QC.
1999 Laboratory of Howard Gutstein, M.D./Ph.D., Director of Research, Dept. of Anesthesiology, MD Anderson Cancer Center, Houston, TX. Training of intrathecal catheterization and analgesic modeling techniques to research group.
2000 Research consultant for Ligand Pharmaceuticals, San Diego, CA.
2000 Laboratory of Dr. Sandra Roerig, Professor of Pharmacology/Associate Dean for Research, LSU Medical Center, Shreveport, LA. Training of intrathecal catheterization and analgesic modeling techniques to research group.
2000 Laboratory of Dr. James Zadina, Professor of Pharmacology/ Director of Neurosciences Program, Tulane University School of Medicine, New Orleans, LA. Training of intrathecal catheterization to research group.
2001 Visiting Professor, Neuroscience Lab Course, Dr. George Wilcox, co-director, University of Minnesota Neuroscience Program. Amphibian model for testing analgesics used in a live laboratory course (also subsequent years).
2001 Laboratory of Ken McCarson, Ph.D., Associate Professor of Pharmacology, University of Kansas Medical Center, Kansas City, KS. Training and collaboration on vanilloid-like receptor function in *Rana pipiens*.
2002 Laboratory of Paul Prather, Ph.D., Associate Professor of Pharmacology. University of Arkansas for Medical Sciences, Little Rock, AR. Collaboration on transfection of frog opioid receptors in cell lines.
2002 Visiting Professor, Dept. of Neuroscience, University of Minnesota Medical School, March 12-14, 2002.
2003 Visiting Professor, Dept. of Neuroscience, University of Minnesota Medical School, April 8 to 10, 2003.
2003 Visiting Professor, Dept. of Medicinal Chemistry, University of Mississippi, Oxford. MI, May 7-9, 2003.
2004 Visiting Professor, Dept. of Neuroscience, University of Minnesota Medical School, April 12-15, 2004.
2005 Visiting Professor, Dept. of Neuroscience, University of Minnesota Medical School, April 11-13, 2005.

INVITED TALKS/SEMINARS/KEYNOTE PRESENTATIONS

1. *"Opioid antinociception in amphibians"*, Satellite Symposium: Behavioral Biology of Nociception: Comparative, Developmental, and Sexual Aspect, Society for Neuroscience, New Orleans, LA, November, 1987.
2. *"An amphibian model for the assessment of opioid action"*, Annual Meeting of the College on Problems in Drug Dependence (CPDD), Richmond, VA, June, 1989.
3. *"Alternatives to the use of mammals for pain research"*, OSU College of Veterinary Sciences, Annual Research Symposium, Stillwater OK, May 1991.
4. *"An amphibian model for pain research"*, Northeastern State University, Science and Technology Seminar Series, Tahlequah OK, October, 1991.
5. *"An amphibian model for pain research"*, Children's Medical Center, Chapman Research Institute Seminar Series, Tulsa OK, November, 1991.
6. *"An amphibian model for pain research"*, Oklahoma State University, Dept. of Zoology Seminar Series, Stillwater OK, January, 1992.
7. *"Alternatives to the use of mammals for opioid research"*, OSU College of Veterinary Sciences, Annual Research Symposium, Stillwater OK, May 1992.
8. *"An amphibian pain model for opioid research"*, University of Tulsa Biology Department Colloquium, Tulsa, OK, September 1992.
9. *"An amphibian pain model for opioid research"*, University of Oklahoma Health Sciences Center, Dept. of Anatomy, Oklahoma City, OK, October, 1992.
10. *"Studies of opioid tolerance in an amphibian pain model"*, 1st Annual Young Investigators Symposium, College on Problems in Drug Dependence (CPDD), Toronto, June, 1993.
11. *"Relative analgesic potency of mu and kappa opioids in amphibians: a unique assay for kappa opioid action?"*, College on Problems of Drug Dependence (CPDD), Palm Beach, FL, 1994.
12. *"An amphibian pain model for opioid research"*, UCSD, Anesthesiology Research Lab Group, April, 1994.
13. *"An amphibian model for pain research"*, Pharmacology Dept., LSU Med Center, New Orleans, 9/27/94.
14. *"Alternatives to the use of mammals for pain research"*, NIH/OPPR/LSU sponsored workshop, New Orleans, September 29-30, 1994.
15. *"Alternatives to the use of mammals for pain research: an amphibian model"*, SCAW/CCAC Conference, Toronto, Canada, September 28, 1995.
16. *"An amphibian model for studies of opioid action"*, University of Minnesota Medical School, Dept. of Pharmacology Seminar Series, Minneapolis, MN, January 19, 1996.
17. *"An alternative model for testing of opioid analgesics and pain research using amphibians"*, 2nd World Congress on Alternatives and Animal Use in the Life Sciences, Utrecht, Netherlands, October 21, 1996.
18. *"From Pond to Pain: An Amphibian Model for Opioid Analgesia"*, Anatomy/Physiology Seminar Series, University of Oklahoma Health Sciences Center, Oklahoma City, OK, May 20, 1997.
19. *"From Pond to Pain: An Amphibian Model for Opioid Analgesia"*, invited Symposium speaker, Annual Meeting of the Midwest Pain Interest Group (PIG), Medical College of Wisconsin, Milwaukee, WI, June 6, 1997.
20. *"Studies of selective mu opioid antagonism after spinal administration of beta-FNA in amphibians"*, invited Symposium speaker, College on Drug Dependence (CPDD) Annual Meeting, Nashville, TN, June 16, 1997.
21. *"The unireceptor hypothesis of opioid antinociception in amphibians: implications for the evolution of opioid receptors"*, invited Symposium speaker, International Narcotics Research Conference (INRC), Munich, Germany, July 20-25, 1998.
22. *"An Amphibian Whole-Animal Alternative for the Study of Pain"*, invited participant for symposium, All Creatures Weird and Wonderful: Revolutionary Approaches to Medical Discovery, AAAS Meeting, Anaheim, CA, Jan, 23, 1999.
23. *"Perspectives on Opioid Tolerance from Basic Research"*, MD Anderson-University of Texas Medical Center, Dept. of Anesthesiology and Critical Care, Houston, TX, November 18, 1999.
24. *"An Alternative Model for Pain and Analgesia Research Using Amphibians"*, invited Symposium speaker, Scientists Center for Animal Welfare (SCAW), Spring Meeting, Baltimore, MD, May 19, 2000.
25. *"From Pond to Pain: Investigating Mechanisms of Opioid Analgesia Using Amphibians"*, OSU, Zoology, Stillwater, OK, 9/22/00.
26. *"Investigating Mechanisms of Opioid Analgesia in Amphibians"*, LSU-Medical Center, Dept. of Pharmacology, Shreveport, LA, December 5, 2000.
27. *"An Amphibian Model for the Study of Opioid Analgesics"*, University of Kansas Medical Center, Dept. of Pharmacology, Toxicology and Therapeutics, Kansas City, KS, September 11, 2001 (re-scheduled and presented on December 11, 2001).
28. *"An Amphibian Model for Analgesia Testing"*, Univ. of Oklahoma Dental School, Student Research Society Annual Banquet, Myriad Convention Center, Oklahoma City, OK, April 12, 2002.
29. *"Mechanisms of Opioid Analgesia in Amphibians"*, Dept. of Neuroscience, Univ. of MN, Minneapolis, MN, April 16, 2002.
30. *"An Amphibian Model for Investigation of Opioid Analgesia and Pain-processing"*, at the Cross-Species Approach to Pain and Analgesia conference, sponsor: Mayday Fund, Airlie Conference Center, Warenton, VA, Sept. 19, 2002.
31. *"An Amphibian Model for Opioid Research"*, Dept. of Pharmacology and Toxicology, University of Arkansas for Medical Sciences, Little Rock, AR, October 16, 2002.
32. *"Opioid research using amphibians and the evolution of opioid receptors"*, Dept. of Medicinal Chemistry, University of Mississippi, Oxford. MI, May 8, 2003.
33. *"Opioid research using amphibians and the evolution of opioid receptors"*, invited Symposium speaker, British Society for Experimental Biology, Edinburgh, Scotland, April 2, 2004.
34. *"Opioid research using amphibians and the evolution of opioid receptors"*, invited Symposium speaker, European Opioid Conference, Budapest, Hungary, April 8, 2004.

INVITED TALKS/SEMINARS/KEYNOTE PRESENTATIONS (CONT.)

35. *"Opioid research using amphibians: a unique perspective on the evolution of vertebrate opioid receptors"*, Seminar for the Center for Pain Research, University of Minnesota, Minneapolis, MN, April 15, 2004.
36. *"An Evolutionary Approach to Understanding Vertebrate Opioid Rceptors"*, Veterinary Biomedical Sciences Seminar Series, OSU-College of Veterinary Medicine, Stillwater, OK, January 27, 2005.
37. *"Opioid research using amphibians: An Evolutionary Approach to Understanding Vertebrate Opioid Receptors"*, Seminar for the Department of Neuroscience, University of Minnesota Medical School, Minneapolis, MN, April 12, 2005.
38. *"Opioid analgesia research in amphibians: from behavioral assay to cloning opioid receptor genes"*, Keynote speaker, Annual meeting of the Association of Reptile and Amphibian Veterinarians, Baltimore, MD, April 23-26, 2006.
39. *"Insights on the Molecular Evolution of Vertebrate Opioid Receptors: From Frog to Man"*, Physiology Seminar Series, University of Oklahoma Health Sciences Center, Oklahoma City, OK, January 25, 2007.
40. *"Evolution of opioid receptors: why the mu opioid receptor would make Darwin proud"* INRC Annual Meeting, Charleston, SC, USA, July 15, 2008.
41. *"Evolution of Opioid Receptors: Why the Mu Opioid Receptor Would Make Darwin Proud"*, Veterinary Biomedical Sciences Seminar Series, OSU-Center for Veterinary Medical Sciences, OSU-Stillwater, Stillwater, OK, March 5, 2009.
42. *"Evolution of Opioid Receptors"*, AAAS-SWARM Meeting, Tulsa, OK, March 30, 2009.
43. *"Molecular Evolution of Vertebrate Opioid Receptors"*, Invited speaker, Genetics Group, St. Francis Hospital, March 15, 2012.
44. *"Molecular Evolution of Opioid Receptors"*, Seminar Speaker, Human Anatomy and Physiology Society (HAPS) Annual Meeting, University of Tulsa, May 28, 2012.
45. *"Ethical Issues of an Amphibian Pain Model"*, La souffrance animale: de la science au droit (Animal suffering: the science and the law) World Organization for Animal Health (OIE) Paris, France, October 18-19, 2012.
46. *"Pharmacological Exculpation or Mitigation: Effects of Drugs on Brain and Behavior"* Oklahoma Criminal Defense Institute, Hard Rock Casino, Tulsa, OK, June 23, 2016.

SCIENTIFIC PRESS

1. Stevens, C.W., *"No Pain, Some Gain: A New Model for Neuropathic Pain"*, Journal of NIH Research, May, 1990, p.33-35.
2. Stevens, C.W., *"Funding for Young Investigators"*, Letters to the Editor, Science, Vol. 255, p. 142, 1992.
3. Stevens, C.W., Response to *"Letters from the Editor"*, Lab Animal, Vol. 25, p. 42, 1996.
4. Stevens, C.W.; Response to *Protocol Review Column*, Lab Animal, Vol. 26, p 23-24, October, 1997.
5. Stevens, C.W., *"Evolution and Faith: Empathy Is Misplaced"*, Letters to the Editor, Science, Vol. 320, p. 745, 9 May 2008.

MEDIA ARTICLES/INTERVIEWS/PRESS CONFERENCES

1. *"Northern grass frog helps Tulsan gig research grants"*, Tulsa World Newspaper, August 21, 1992.
2. *"Research Grants"*, op-ed page, Tulsa World Newspaper, September 7, 1992 (*Animal rights response*).
3. *"Get Priorities Straight"*, op-ed page, Tulsa World Newspaper, September 20, 1992. (*support of research*)
4. *"Animal Research Needed"*, op-ed page, Tulsa World Newspaper, September 20, 1992. (*support*)
5. *"Who Suffers? Children or the Frogs?"*, op-ed page, Tulsa World Newspaper, September 27, 1992. (*support*)
6. *"The Frogman"*, Tulsa People Magazine, March, 1994. (*profile*)
7. *"Success by Six"* Interview on brain activity in children, KGRH, Tulsa 6pm Evening News, August 10, 1996
8. *"State's Share of Funds Short, Researchers Say"*, interviewed & (mis)quoted, The Daily Oklahoman, January 11, 1999.
9. *"State's Research Fund Malnourished"*, interviewed & (mis)quoted, Tulsa World, Jan. 15, 1999, p A10
10. *"All Creatures Weird and Wonderful: Revolutionary Approaches to Medical Discovery"*, Press Conference, American Association for the Advancement of Sciences (AAAS) Anaheim, CA, Jan 23, 1999.
11. *"Research Report"*, radio interview for Radio Netherlands, Jan 23, 1999.
12. *"Animals Hold Key to Cures: Medical Science Plumbs Secrets of Scorpions, Fish, Frogs"* SF Examiner, Jan. 25, 1999.
13. *"What will ease the pain? Ask a frog"*, Science News, Vol. 155, p. 91, February 6, 1999.
14. *"Painful Choices"*, New Scientist Online Conference Reports, Feb. 6, 1999.
15. *"Notebook: Frog Simplicity"*, The Scientist, Vol. 13 (4), p. 32, February 15, 1999.
16. *"Suffer the little amphibians"*, The London Times- Higher Education Supplement, Issue 1379, pp. 22-23, April 9, 1999.
17. *"Heat, Some Medicines Don't Mix"*, Tulsa World Newspaper, p A-9, August 4, 1999.
18. *"OSU grant allows pain medicine study"*, The Daily Oklahoman, p. 3-B, August 27, 2001
19. *"Research frogs may lead to medical leaps and bounds"*, The Tulsa World, Sept. 5, 2001.
20. *"OSU researchers to study pain relief"*, The Tulsa World, p. D-7, Aug. 22, 2002.
21. *"Of Frogs and Pain – Weird Lab Recognized"*, Tulsa Business Journal, Vol 12 (#36), p. 10, Sept 6-12, 2002.
22. *"Oklahoma Innovations Radio Show"*, invited guest to talk about OSU-CHS and OCAST-funded research, 3/4/03.
23. *"Oklahoma Scientists and the Human Genome"*, article about Dr. Stevens' lab, Oklahoma Magazine, Oct., 2003.
24. *"OSU Professor Receives Grant"*, The Daily O'Collegian, OSU Newspaper, September 8, 2004.
25. *"The Other O.C. (Oxycontin)"*, The Tulsa World Newspaper, Feb, 17, 2005, D-1 (cont. D-6). CWS is the *"voice of reason"*.
26. *"Do Boiling Lobsters Feel Pain?"* interviewed for ABC news special series on pain, May 10, 2005. http://abcnews.go.com
27. *"Tough times add to panic, anxiety disorders"*, Tulsa World Newspaper interview, D-3, April 2, 2009.
28. *"Take pains to excercise"*, Tulsa World Newspaper interview, D-3, July 18, 2009.

MEDIA ARTICLES/INTERVIEWS/PRESS CONFERENCES (CONT.)

29. *"OSU medical students say juggling is great for the brain"*, Dr. Stevens' Med School juggling club and video interview by Rick Wells from Newson6.com, August 25, 2010 (video at: http://www.youtube.com/watch?v=BCFqa0D8BY8)
30. *"OSU Jugglers: Fox 23 Daybreak Show"*, Kristin Talent interview and juggling by Dr. Stevens, Feb. 11, 2011 (video at: http://clipsyndicate.com/video/playlist/0/2208385?wpid=9601)
31. *"Juggle Heads: Keeping both sides of brain active is key to a healthy mind"*, Tulsa World article by Kim Brown featuring interview and photos of Dr. Stevens and the Med School Chapter of the T-Town Juggling Club. Jan. 27, 2011.
32. *"Innovations Radio Show"*, interview with Dr. Stevens about his research on opioids. Oklahoma City, OK. April 6, 2011.
33. *"Letters to the Editor: Research Supported"*, The Tulsa World Newspaper, Aug. 28, 2011.
34. *"Turning to Frogs for Illegal Aid in Horse Races"*, The New York Times Newspaper – Front Page, June 20, 2012.
35. *"Secrets still shroud Clayton Lockett's execution"*, The Tulsa World Newspaper, May 11, 2014.
36. *"Questions, inconsistencies about Clayton Lockett execution remain unanswered"*, The Tulsa World, August 31, 2014.
37. *"Federal nursing home comparison website receives updates"*, The Tulsa World Newspaper, February 21, 2015.
38. *"Scientists in Tulsa conducting ground-breaking research to eliminate addiction"*, KOCO News at 6, Feb. 6, 2016.

PEER-REVIEWED PRIMARY PUBLICATIONS

1. Stevens, C.W. and Pezalla, P.D., A spinal site mediates opiate analgesia in frogs. Life Sci. 33: 2097-2013, 1983.
2. Stevens, C.W. and Pezalla, P.D., Naloxone blocks the analgesic action of levorphanol but not dextrorphan in the leopard frog. Brain Research 301: 171-174, 1984.
3. Pezalla, P.D., and Stevens, C.W., Behavioral effects of morphine, levorphanol, dextrorphan, and naloxone in *Rana pipiens*. Pharm. Biochem. Behavior 21: 213-217, 1984.
4. Yaksh, T.L., and Stevens, C.W., Simple catheter preparation permitting bolus intrathecal administration during chronic intrathecal infusion. Pharmacology, Biochemistry and Behavior, 25: 483-485, 1986.
5. Stevens, C.W. and Yaksh, T.L., Spinal action of dermorphin an extremely potent opioid peptide from frog skin, Brain Research, 385: 300-304, 1986.
6. Stevens, C.W. and Yaksh, T.L., Dynorphin A and related peptides administered intrathecally in the rat: A search for putative *kappa* opiate receptor activity. J. Pharmacol. Exp. Ther., 238: 833-838, 1986.
7. Stevens, C.W. Pezalla, P.D., and Yaksh, T.L., Spinal antinociceptive action of three representative opioids in frogs. Brain Research, 402: 201-203, 1987.
8. Stevens, C.W., Weinger, M.B. and Yaksh, T.L., Intrathecal dynorphins suppress hindlimb electromyographic activity in rats. Eur. J. Pharmacol., 138: 299-302, 1987.
9. Stevens, C.W. and Yaksh, T.L., Chronic antagonist infusion does not increase morphine antinociception in rat spinal cord. Brain Research, 425: 388-390, 1987.
10. Stevens, C.W., Monasky M.S. and Yaksh, T.L., Spinal infusion of opiate and alpha-2 agonists in rats: Tolerance and cross-tolerance studies, J. Pharmacol. Exp. Ther. 244: 63-70, 1988.
11. Schick, R.R., Stevens, C.W., Yaksh, T.L. and Go, V.L.W., Chronic intraventricular administration of CCK octapeptide suppresses feeding in rats. Brain Research, 448:294-298, 1988.
12. Stevens, C.W., and Yaksh, T.L., Potency of infused spinal antinociceptive agents is inversely related to magnitude of tolerance after continuous infusion. J. Pharmacol. Exp. Ther. 250: 1-8, 1989.
13. Sosnowski, M., Stevens, C.W., and Yaksh, T.L., Assessment of the role of A1/A2 adenosine receptors mediating the purine antinociceptive, motor, and autonomic function in rat spinal cord. J. Pharmacol. Exp. Ther. 250: 915-922, 1989.
14. Stevens, C.W., and Yaksh, T.L., Time course characteristics of tolerance development to continuously infused antinociceptive agents in rat spinal cord. J. Pharmacol. Exp. Ther. 251: 216-233, 1989.
15. Stevens, C.W., and Yaksh, T.L., Magnitude of opioid dependence after continuous intrathecal infusion of *mu* and *delta* opioids in the rat. Eur. J. Pharmacol. 166: 467-472, 1989.
16. Morón, M.A., Stevens, C.W., and Yaksh, T.L., Diltiazem enhances and flunarizine inhibits nimodipine's antiseizure effects. Eur. J. Pharmacol. 163: 299-307, 1989.
17. Stevens, C.W. and Pezalla, P.D., Endogenous opioid system down-regulation during hibernation in amphibians. Brain Research, 494: 227-231, 1989.
18. Yanez, A., Sabbe, M.B., Stevens, C.W., and Yaksh, T.L., Interaction of midazolam and morphine in the rat spinal cord. Neuropharmacology 29: 359-364, 1990.
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STATE OF SOUTH DAKOTA :SS COUNTY OF MINNEHAHA	)	IN CIRCUIT COURT SECOND JUDICIAL CIRCUIT

CHARLES RUSSELL RHINES, **Plaintiff,** v. SOUTH DAKOTA DEPARTMENT OF CORRECTIONS, MIKE LEIDHOLT, SECRETARY, SOUTH DAKOTA DEPARTMENT OF CORRECTIONS, DARIN YOUNG IN HIS CAPACITY AS WARDEN OF THE SOUTH DAKOTA STATE PENITENTIARY, and JASON R. RAVNSBORG IN HIS CAPACITY AS THE ATTORNEY GENERAL FOR THE STATE OF SOUTH DAKOTA, Defendants.	CIV. 19-_____ **THIS IS A CAPITAL CASE EXECUTION SET FOR BETWEEN NOVEMBER 3, 2019 AND NOVEMBER 9, 2019**

AFFIDAVIT OF DANIEL R. FRITZ

STATE OF SOUTH DAKOTA)
:SS
COUNTY OF MINNEHAHA)

Daniel R. Fritz, being first duly sworn on oath, states and alleges as follows:

1. I am an attorney for Plaintiff Charles Russell Rhines in the above-captioned case, and I have knowledge of the matters herein.

2. Attached hereto to as Exhibit 1 is a true and correct copy of a Complaint, with exhibits, filed by Charles Russell Rhines ("Rhines") seeking injunctive and declaratory relief directing Defendants South Dakota Department of Corrections ("DOC"), Mike Leidholt, Secretary of the DOC, Darin Young, in his capacity as warden of the South Dakota State Penitentiary, and Jason R. Ravnsborg, in his capacity as the Attorney General for the State of South Dakota

(collectively, "Defendants") to execute Rhines in accordance with South Dakota Codified Law, to wit, "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch 181, codified at SDCL 23A-27A-32. (1984).

3. Attached hereto as Exhibit 2 is a true and correct copy of Harwood Nuss' Clinical Practice of Emergency Medicine, 6th Ed. CH307, which can be found at on Westlaw LWWEMERG6TH CH307.

4. Attached hereto as Exhibit 3 is a true and correct copy of selected pages from Guide to Drug Abuse Research Terminology, Nelson, Jack E; National Institute on Drug Abuse, (1982).

5. Attached hereto as Exhibit 4 is a true and correct copy of the manufacturer's package insert provided for Nembutal Sodium Solution, which can be located at http://www.akorn.com/documents/catalog/package_inserts/76478-501-20.pdf

Dated this 22nd day of October, 2019.

Daniel R. Fritz

Subscribed and sworn to before me this 22nd day of October, 2019.

Notary Public – South Dakota
My Commission Expires: 3/7/24

(SEAL)

JUDY L. DECKER
Notary Public
SEAL
South Dakota

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	:SS	
COUNTY OF MINNEHAHA	)	SECOND JUDICIAL CIRCUIT

CHARLES RUSSELL RHINES, Plaintiff, v. SOUTH DAKOTA DEPARTMENT OF CORRECTIONS, MIKE LEIDHOLT, SECRETARY, SOUTH DAKOTA DEPARTMENT OF CORRECTIONS, DARIN YOUNG IN HIS CAPACITY AS WARDEN OF THE SOUTH DAKOTA STATE PENITENTIARY, and JASON R. RAVNSBORG IN HIS CAPACITY AS THE ATTORNEY GENERAL FOR THE STATE OF SOUTH DAKOTA, Defendants.	CIV. 19-_____ **THIS IS A CAPITAL CASE EXECUTION SET FOR BETWEEN NOVEMBER 3, 2019 AND NOVEMBER 9, 2019**

COMPLAINT

COMES NOW PLAINTIFF, and for his Complaint against Defendants, states and alleges as follows:

INTRODUCTION

1. This is a Complaint seeking injunctive and declaratory relief directing Defendants South Dakota Department of Corrections ("DOC"), Mike Leidholt, Secretary of the DOC, Darin Young, in his capacity as warden of the South Dakota State Penitentiary, and Jason R. Ravnsborg, in his capacity as the Attorney General for the State of South Dakota (collectively, "Defendants") to execute Plaintiff Charles Russell Rhines ("Rhines") in accordance with South Dakota Codified Law, to wit, "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict

is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch. 181, codified at SDCL 23A-27A-32. (1984).

2. Rhines is a prisoner sentenced to death by the State of South Dakota on January 29, 1993.

3. Rhines's execution week is November 3, 2019 through November 9, 2019.

4. SDCL § 23A-27A-32.1 provides in pertinent part that "Any person convicted of a capital offense or sentenced to death prior to July 1, 2007 may choose to be executed in the manner provided in § 23A-27A-32 or in the manner provided by South Dakota law at the time of the person's conviction or sentence. The person shall choose by indicating in writing to the warden not less than seven days prior to the scheduled week of execution the manner of execution chosen." SDCL § 23A-27A-32.1.

5. At the time that Rhines was convicted and sentenced, South Dakota law provided, in pertinent part, that: "The punishment of death shall be inflicted by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch. 181, codified at SDCL § 23A-27A-32 (1984).

6. In enacting SDCL § 23A-27A-32.1, the State of South Dakota created a statutory right that entitles Rhines to be executed in the manner provided by South Dakota law at the time of Rhines's conviction or sentence if he chooses that manner.

7. The State, in enacting SDCL § 23A-27A-32.1, also created life and liberty interests entitling Rhines to the same. Rhines's life and liberty interest is protected by the Due Process Clause

of the Fourteenth Amendment of the United States Constitution and the Due Process Clause of Article Six, Section 2 of the South Dakota Constitution.

8. In a Kite-Request Slip dated October 1, 2019, addressed to Defendant Young, Rhines chose to be executed in the manner that was in effect at the time that he was sentenced to death.

9. In an amended Kite-Request Slip dated October 4, 2019, addressed to Defendant Young, Rhines chose to be executed in the manner that was in effect at the time that he was sentenced to death, to wit, "[t]he Two Drug Protocol of a Lethal Dose of An Ultra-Short Acting Barbiturate and a Chemical Paralytic."

10. On October 15, 2019, attorneys for Rhines, emailed and mailed a letter to Defendants Young and Ravnsborg, and Paul Swedlund, Assistant Attorney General in the Office of the Defendant Attorney General, requesting, among other things, confirmation that Rhines's request to be executed by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent would be honored.

11. In a letter dated October 17, 2019, Assistant Attorney General Swedlund advised counsel that he had received "Mr. Rhines' request for execution pursuant to the combination of drugs provided by statute at the time of his execution." Mr. Swedlund noted that "DOC will follow the law." Mr. Swedlund further informed counsel that "[t]he ultra-short-acting barbiturate the state intends to use is pentobarbital."

12. Upon information and belief, pentobarbital is not an ultra-short-acting barbiturate.

13. Numerous courts have held that pentobarbital is not an ultra-short-acting barbiturate. *See, e.g.*, *Smith v. Montana*, No. BDV-2008-303, 2015 WL 5827252 (Mont. Dist. Ct. Lewis and Clark County Oct. 6, 2015) (unpublished) (attached hereto as Exhibit A) ("This Court rules that pentobarbital is not an ultra-fast-acting barbiturate. The State of Montana will either need to select a

barbiturate that is ultra-fast acting to accomplish the execution of Plaintiffs or it will need to modify its statute.")

14. Medical journals provide that pentobarbital is not an ultra-short-acting barbiturate.

15. Defendants' decision to used pentobarbital, contrary to South Dakota law, deprives Rhines of his statutory right to be executed in the manner of his choice. It also deprives Rhines of his life and liberty interests in being executed in the manner of his choice without due process of law guaranteed under the Due Process Clause of the Fourteenth Amendment of the United States Constitution and the Due Process Clause of Article Six, Section 2 of the South Dakota Constitution.

16. Rhines's execution week is a mere two weeks away. Thus, Rhines brings this action for injunctive and declaratory relief to enforce his right under South Dakota law to be executed by the manner he chose, intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent, and not by pentobarbital which is neither an ultra-short-acting barbiturate nor a chemical paralytic agent.

PARTIES

17. Plaintiff Rhines is a United States citizen and a resident of the State of South Dakota. He is currently a condemned inmate in the custody of Defendants and under the supervision of the DOC in Sioux Falls, South Dakota.

18. Defendant South Dakota Department of Corrections ("DOC") is an agency of the State of South Dakota. The DOC is responsible for all prisons in the State of South Dakota, for the custody and treatment of death-sentenced inmates, and for the execution of such inmates.

19. Defendant Mike Leidholt is the Secretary of the DOC and is sued in his official capacity.

20. Defendant Darin Young is the Warden of the South Dakota State Penitentiary and is sued in his official capacity.

21. Defendant Jason R. Ravnsborg is the Attorney General for the State of South Dakota and is sued in his official capacity.

JURISDICTION AND VENUE

22. This Court has jurisdiction to adjudicate this action under the South Dakota Uniform Declaratory Judgments Act, SDCL § 21-24-1 et seq.

23. Venue in this Court is proper under SDCL § 15-5-2(2), which provides that an action against a public officer shall be brought in the county where the cause, or some part thereof, arose. The injury to Plaintiff because of Defendants' illegal actions has occurred and will occur in the County of Minnehaha and, as such, venue is proper in this Court.

FACTS

24. Rhines was sentenced to death on January 29, 1993.

25. On June 25, 2019, Judge Robert Mandel granted a warrant of execution, which sets forth that Rhines shall be executed between November 3 and November 9, 2019.

26. SDCL § 23A-27A-32.1 provides that:

> Any person convicted of a capital offense or sentenced to death prior to July 1, 2007 may choose to be executed in the manner provided in § 23A-27A-32 ***or in the manner provided by South Dakota law at the time of the person's conviction or sentence.*** The person shall choose by indicating in writing to the warden not less than seven days prior to the scheduled week of execution the manner of execution chosen. If the person fails or refuses to choose in the time provided under this section, then the person shall be executed as provided in § 23A-27A-32.

SDCL § 23A-27A-32.1 (emphasis added).

27. At the time that Rhines was convicted and sentenced, in 1993, South Dakota law provided, in pertinent part, that, "The punishment of death shall be inflicted by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch 181.

28. In 2007, the South Dakota Legislature amended the law as follows:

SOUTH DAKOTA 2007 SESSION LAWS
2007 REGULAR SESSION OF THE 82ND LEGISLATURE

Additions are indicated by Text; deletions by
~~Text~~ . Changes in tables are made but not highlighted.

Ch. 151 (HB 1175)
West's No. 101
CAPITAL PUNISHMENT—LETHAL INJECTION—SUBSTANCES

FOR AN ACT ENTITLED, An Act to provide for the substances used in the execution of a sentence of death and to allow the choice of the substances used in an execution under certain circumstances.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF SOUTH DAKOTA:

Section 1. That § 23A-27A-32 be amended to read as follows:

<< SD ST § 23A-27A-32 >>

23A-27A-32. The punishment of death shall be inflicted within the walls of some building at the state penitentiary ~~or within the yard or enclosure adjoining thereto~~ . The punishment of death shall be inflicted by the ~~intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice~~ intravenous injection of a substance or substances in a lethal quantity. The warden, subject to the approval of the secretary of corrections, shall determine the substances and the quantity of substances used for the punishment of death. An execution carried out by ~~lethal~~ intravenous injection shall be performed by a person ~~selected by the warden and~~ trained to administer the injection who is selected by the warden and approved by the secretary of corrections. The person administering the intravenous injection need not be a physician, registered nurse, ~~or~~ licensed practical nurse, or other medical professional licensed or registered under the laws of this or any other state. Any infliction of the punishment of death by ~~administration of the required lethal~~ intravenous injection of a substance or substances in the manner required by this section may not be construed to be the practice of medicine ~~and any~~ . Any pharmacist or pharmaceutical supplier is authorized to dispense the ~~drugs~~ substance or substances used to inflict the punishment of death to the warden without prescription, for carrying out the provisions of this section, notwithstanding any other provision of law.

Section 2. That chapter 23-A-27A be amended by adding thereto a NEW SECTION to read as follows:
Any person convicted of a capital offense or sentenced to death prior to the effective date of this Act may choose to be executed in the manner provided in this Act or in the manner provided by South Dakota law at the time of the person's conviction or sentence. The person shall choose by indicating in writing to the warden not less than seven days prior to the scheduled week of execution the manner of execution chosen. If the person fails or refuses to choose in the time provided under this section, then the person shall be executed as provided in section 1 of this Act.

Approved February 23, 2007.

29. In 2008, the South Dakota Legislature further amended the law as follows:

SOUTH DAKOTA 2008 SESSION LAWS

2008 REGULAR SESSION OF THE 83RD LEGISLATURE

Additions are indicated by Text; deletions by

~~Text~~ . Changes in tables are made but not highlighted.

Ch. 117 (SB 53)

West's No. 244
CAPITAL PUNISHMENT—JUDGES—WARRANTS

FOR AN ACT ENTITLED, An Act to revise certain provisions related to capital punishment.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF SOUTH DAKOTA:

* * * * * * * * * * * * *

<< SD ST § 23A-27A-32 >>

23A-27A-32. The punishment of death shall be inflicted within the walls of some building at the state penitentiary. The punishment of death shall be inflicted by the intravenous injection of a substance or substances in a lethal quantity. The warden, subject to the approval of the secretary of corrections, shall determine the substances and the quantity of substances used for the punishment of death. An execution carried out by intravenous injection shall be performed by ~~a person~~ persons trained to administer the injection who ~~is~~ are selected by the warden and approved by the secretary of corrections. The ~~person~~ persons administering the intravenous injection need not be ~~a physician~~ physicians, registered ~~nurse~~ nurses, licensed practical ~~nurse~~ nurses, or other medical ~~professional~~ professionals licensed or registered under the laws of this or any other state. Any infliction of the punishment of death by intravenous injection of a substance or substances in the manner required by this section may not be construed to be the practice of medicine. Any pharmacist or pharmaceutical supplier is authorized to dispense to the warden the substance or substances used to inflict the punishment of death ~~to the warden~~ without prescription, for carrying out the provisions of this section, notwithstanding any other provision of law.

30. In a Kite-Request Slip dated October 1, 2019, addressed to Defendant Young, Rhines pursuant to SDCL § 23A-27A-32.1, elected the method of execution that was in effect at the time that he was sentenced to death. (A true and correct copy of the October 1, 2019 Kite-Request Slip is attached hereto as Exhibit B.)

31. In an amended Kite-Request Slip dated October 4, 2019, addressed to Defendant Young, Rhines elected the method of execution that was in effect at the time that he was sentenced to death, to wit, "[t]he Two Drug Protocol of a Lethal Dose of An Ultra-Short Acting Barbiturate and

a Chemical Paralytic." (A true and correct copy of the October 4, 2019 Kite-Request Slip is attached hereto as Exhibit C.)

32. As of October 15, 2019, Defendant Young had not responded to Rhines's Kite-Request Slips. On October 15, 2019, attorneys for Rhines, emailed and mailed a letter to Defendant Young, Defendant Ravnsborg, and Paul Swedlund, Assistant Attorney General in the office of the Attorney General, requesting, among other things, confirmation that Rhines's request to be executed by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent would be honored. (A true and correct copy of the October 15, 2019 letter is attached hereto as Exhibit D.)

33. Rhines's attorneys also requested that the Defendants identify which ultra-short-acting barbiturates will be used to execute Mr. Rhines. (*Id.*)

34. On October 17, 2019, Mr. Swedlund, from the office of Defendant Young, emailed attorneys for Rhines a letter stating, "I am in receipt of your letter regarding Mr. Rhines' request for execution pursuant to the combination of drugs provided by statute at the time of his execution. The DOC will follow the law. The ultra-short-acting barbiturate the state intends to use is pentobarbital." (A true and correct copy of the October 17, 2019 letter is attached hereto as Exhibit E.)

35. Upon information and belief, ultra-short-acting barbiturates include sodium methohexital and sodium thiopental.

36. Upon information and belief, pentobarbital is not an ultra-short-acting barbiturate. Nor is it a chemical paralytic agent.

37. Defendants intend to execute Mr. Rhines, in contravention of his statutory right to elect the method of his execution, with pentobarbital, a drug that is not an ultra-short-acting barbiturate. Pentobarbital is not a chemical paralytic agent either.

First Cause of Action—Violation of the Right to Choose the Manner of Execution Provided by Law at the Time of Sentence (Against All Defendants)

38. Rhines incorporates by reference each and every allegation contained in the foregoing paragraphs as if specifically alleged herein.

39. In enacting SDCL § 23A-27A-32.1, the State of South Dakota created and codified a state statutory right that entitles Rhines to be executed in the manner provided by South Dakota law at the time of the Rhines's conviction or sentence. Defendants have a corresponding duty to ensure Rhines can exercise this right.

40. The manner of execution provided by South Dakota law at the time of Rhines's conviction and sentence was, in relevant part, "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch. 181, codified at SDCL § 23A-27A-32 (1984).

41. SL 1984, ch 181 created a right to an execution "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch. 181, codified at SDCL § 23A-27A-32 (1984).

42. Rhines has a right to execution "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." *Id.*

43. Rhines's right to be executed in the manner set forth in SL 1984, ch 181 is codified and protected by SDCL § 23A-27A-32.

44. Rhines has exercised his right to choose the manner set forth in SL 1984, ch 181. Rhines has done so in accordance with the provisions of SDCL § 23A-27A-32.1.

45. Defendants cannot deprive Rhines of his right to be executed in the manner of his choice. Defendants have a duty to ensure Rhines can exercise his right.

46. Defendants assert pentobarbital is an ultra-short-acting barbiturate. (Exh. E.)

47. Upon information and belief, pentobarbital is neither an ultra-short-acting barbiturate nor a chemical paralytic agent.

48. Upon information and belief, ultra-short-acting barbiturates include sodium methohexital and sodium thiopental.

49. By refusing to guarantee that Rhines will be executed in the manner set forth in SL 1984, ch 181, Defendants are depriving Rhines of his state statutory right created and protected by SDCL § 23A-27A-32.1 and SL 1984, ch. 181, codified at SDCL § 23A-27A-32 (1984).

Second Cause of Action– Deprivation of Due Process (Against All Defendants)

50. Rhines incorporates by reference each and every allegation contained in the foregoing paragraphs as if specifically alleged herein.

51. In enacting SDCL § 23A-27A-32.1, the State of South Dakota created life and liberty interests that entitle Rhines to be executed in the manner provided by South Dakota law at the time of the Rhines's conviction or sentence.

52. The manner of execution provided by South Dakota law at the time of Rhines's conviction and sentence was, in relevant part, "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch 181.

53. SL 1984, ch 181 creates protected life and liberty interests in execution "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch 181.

54. Rhines has life and liberty interests in execution "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch 181.

55. Rhines's life and liberty interests in being executed in the manner set forth in SL 1984, ch 181 are protected by the Due Process Clause of the Fourteenth Amendment of the United States Constitution.

56. Rhines's life and liberty interests in being executed in the matter set forth in SL 1984, ch 181 are protected by the Due Process Clause of Article Six, Section 2 of the South Dakota Constitution.

57. By stating their intention to execute Rhines using pentobarbital, which is neither an ultra-short-acting barbiturate nor a chemical paralytic agent, Defendants are deliberately and intentionally depriving Rhines of his life and liberty interests to be executed in the manner of his choice without due process of law.

Third Cause of Action – Injunctive Relief (Against All Defendants)

58. Rhines incorporates by reference each and every allegation contained in the foregoing paragraphs as if specifically alleged herein.

59. Defendants' decision to use pentobarbital to execute Rhines deprives Rhines of his statutory right to be executed using an ultra-short-acting barbiturate. It also deliberately and

intentionally deprives Rhines of his life and liberty interests in being executed using an ultra-short-acting barbiturate without due process of law guaranteed under the United States and South Dakota Constitutions.

60. Rhines has a substantial likelihood of success on the merits of his claims.

61. Rhines will suffer severe and irreparable injury if Defendants are not enjoined from executing Rhines with pentobarbital, in violation of his rights.

62. The interests of justice will be served by the Court ordering that: (a) Defendants are prohibited from executing Rhines with Pentobarbital, and; (b) Defendants are required to execute Rhines "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate", to wit, sodium methohexital or sodium thiopental.

Fourth Cause of Action – Declaratory Judgment (Against All Defendants)

63. Rhines incorporates by reference each and every allegation contained in the foregoing paragraphs as if specifically alleged herein.

64. The Uniform Declaratory Judgment Act, SDCL§ 21-24-1, provides that the "Courts of record within their respective jurisdictions shall have power to declare rights, status, and other legal relations whether or not further relief is or could be claimed. No action or proceeding shall be open to objection on the ground that a declaratory judgment or decree is prayed for. The declaration may be either affirmative or negative in form and effect; and such declaration shall have the force and effect of a final judgment or decree."

65. A valid case or controversy exists between the parties because Defendants intend to execute Rhines in violation of Rhines's statutory and constitutional rights.

66. Rhines seeks a declaration that pentobarbital is not an ultra-short-acting barbiturate.

67. Rhines seeks a declaration that Defendants are enjoined from executing Rhines with pentobarbital.

68. Rhines seeks a declaration that: (a) Defendants are prohibited from executing Rhines with Pentobarbital, and; (b) Defendants are required to execute Rhines "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate", to wit, sodium methohexital or sodium thiopental.

69. Rhines has suffered and will suffer an injury in fact based upon Defendants' deprivation of his statutory and due process rights.

70. There is a causal connection between Rhines's injury and Defendants' conduct.

71. Rhines's injury will be redressed by a judgment declaring that: (a) pentobarbital is neither an ultra-short-acting barbiturate nor a chemical paralytic agent; (b) Defendants are enjoined from executing Rhines with pentobarbital, and (c) Defendants are required to execute Rhines only "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate", to wit, sodium methohexital or sodium thiopental.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for judgment against Defendants as follows:

A. A judgment declaring that: (1) pentobarbital is not an ultra-short-acting barbiturate; (2) Defendants are enjoined from executing Rhines with pentobarbital, and (3) Defendants are required to execute Rhines only "by the intravenous administration of a lethal quantity of an ultra-short-acting barbiturate", to wit, sodium methohexital or sodium thiopental.

B. A preliminary and permanent injunction ordering that: (1) Rhines's execution is stayed pending adjudication of this action; (2) pentobarbital is not an ultra-short-acting barbiturate; (3) Defendants are enjoined from executing Rhines with pentobarbital, and (4) Defendants are required to execute Rhines only "by the intravenous administration of a

lethal quantity of an ultra-short-acting barbiturate", to wit, sodium methohexital or sodium thiopental.

C. For other and further relief as the court deems proper.

Dated this 22nd day of October, 2019.

BALLARD SPAHR LLP

By: /s/ Daniel R. Fritz

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2015 WL 5827252 (Mont.Dist.) (Trial Order)
District Court of Montana.
First Judicial District Court
Lewis And Clark County

Ronald Allen SMITH and William Gollehon, Plaintiffs,
v.
STATE OF MONTANA, DEPARTMENT OF CORRECTIONS; Director Mike Batista; Warden Leroy Kirkegard; and John Does 1-20, Defendants.

No. BDV-2008-303.
October 6, 2015.

Findings of Fact, Conclusions of Law and Order

Ronald F. Waterman.

Jim Taylor.

Gregory A. Jackson.

Michael Donahoe.

Timothy C. Fox/ C. Mark Fowler/Pamela P. Collins/Jonathan M. Krauss, Robert Stutz.

Jeffrey M. Sherlock, Judge.

INTRODUCTION

*1 Before proceeding, it important to clarify the nature of this case. This Court has not been asked and will not make a determination as to whether lethal injection of the Plaintiffs constitutes cruel and unusual punishment. This case is not about the constitutionality or appropriateness of the death penalty in Montana. This case is not about whether the use of pentobarbital in a lethal injection setting is cruel and unusual or if pentobarbital in the doses contemplated by the State of Montana would produce a painless death. Further, this case is not about the availability of pentobarbital or any other drug. This case is only about whether the drug selected by the Department of Corrections to effectuate the Plaintiffs' lethal injections, pentobarbital, meets the legislatively required classification of being an "ultra-fast acting barbiturate."

This Court rules that pentobarbital is not an ultra-fast-acting barbiturate. The State of Montana will either need to select a barbiturate that is ultra-fast acting to accomplish the execution of Plaintiffs or it will need to modify its statute as will be detailed below.

From the testimony and evidence presented, the Court enters the , following:

FINDINGS OF FACT

Trial in this matter was held on September 2 and 3, 2015. Representing Plaintiffs were Ronald F. Waterman, James Park Taylor, and Gregory A. Jackson. Representing the State of Montana were C. Mark Fowler, Pamela P. Collins, Jonathan M. Krause, and Robert Stutz. The Court received numerous exhibits and heard from two witnesses, Dr. Mark Heath and Dr. R. Lee Evans.

Jurisdiction and venue are proper in this Court.

Plaintiff Ronald Allen Smith, an inmate at Montana State Prison, has been sentenced to death for the killing of two young men in 1982.

Plaintiff William J. Gollehon, an inmate at Montana State Prison, has been sentenced to death for the killing of another inmate at Montana State Prison in 1990.

The Montana Supreme Court has upheld the death sentences of both Plaintiffs. *State v. Smith*, 280 Mont. 158, 931 P.2d 1272 (1996); *State v. Gollehon*, 262 Mont. 1, 864 P.2d 249 (1993).

Session law 1983 Montana Laws chapter 411 enacted lethal injection as an option for the execution of prisoners sentenced to death. That provision introduced the phrase "ultra-fast-acting barbiturate" into Montana Code Annotated § 46-19-103.

As of March 19, 1997, lethal injection became the sole method of execution of a sentence of death.

Montana Code Annotated § 46-19-103(3) provides: "[t]he punishment of death must be inflicted by administration of a continuous, intravenous injection of a lethal quantity of an ultra-fast-acting barbiturate in combination with a chemical paralytic agent until a coroner or deputy coroner pronounces that the defendant is dead."

The current Execution Technical Manual (ETM) was adopted on January 16, 2013. (*See* PL's Ex. 1.) The two-drug protocol is referenced on pages 41, and 50 through 53 of the current ETM. There it is indicated that sodium pentothal and pancuronium bromide will be used in the execution. At page 51, it is indicated that these drugs may be substituted by another drug based on availability. It is specifically provided that pentobarbital with a dosage of 5 gms may be substituted for sodium pentothal. Further, rocuronium bromide with a dosage of 1,000 mgs may be substituted for pancuronium bromide.

*2 The State of Montana is the only state that specifies that the death penalty be accomplished by an "ultra-fast-acting barbiturate." The other states employing the death penalty either specify a particular drug to be used or merely state that execution is to take place by means of lethal injection.

The only issues remaining in this case are what the Montana legislature meant by using the words "ultra-fast-acting barbiturate" in Montana Code Annotated § 46-19-103, and whether pentobarbital is an ultra-fast-acting barbiturate within the meaning of Montana Code Annotated § 46-19-103.

Pentobarbital and thiopental are included in the class of drugs known as barbiturates.

At trial, the first witness was Dr. Mark Heath. His curriculum vitae was received as Plaintiffs Exhibit 8. Dr. Heath is a practicing anesthesiologist in New York at the Columbia Medical Center and also teaches medicine at the Columbia School of Medicine. Dr. Heath is a Board Certified Anesthesiologist and has written extensively on lethal injection. He has testified before various courts and legislatures, and has written articles and book chapters about lethal injection. Dr. Heath has also extensively studied various types of lethal injection, by reviewing witnesses descriptions, execution logs, publications, and electroencephalogram results of people who have been executed by means of lethal injection. All of Dr. Heath's opinions, which will be cited below, were given with a reasonable degree of medical certainty. The bottom line for Dr. Heath is that pentobarbital — the drug selected by the Montana Department of Corrections — is not an ultra-fast-acting barbiturate.

Barbiturates were first created in the 1930s and, as a class, share a certain common core ring of molecules. In general, barbiturates are weak acids that are absorbed and rapidly distributed to all tissues of the human body. Barbiturates are known by their

lipid solubility. Barbiturates possessing more lipid solubility distribute more rapidly to the human brain. The basic core ring of barbiturate molecules has been modified over the years, and those modifications affect how certain barbiturates operate.

Experts speak of "vein-to-brain time," which is the amount of time it takes a barbiturate injected into the blood stream to transit to the human brain. In addition, there is a "blood-brain barrier." This is a grouping of cells and capillaries around the human brain that prevent toxins from entering the brain. Certain modifications to the basic barbiturate structure have allowed a rapid transfer through the blood-brain barrier. According to Dr. Heath, it is often important to have a very quick transition from consciousness to unconsciousness, quickly penetrating the blood-brain barrier, which allows physicians to take control of a patient's breathing to prevent negative consequences from occurring as a patient enters unconsciousness. According to Dr. Heath, this is the purpose of the development of ultra-fast-acting barbiturates.

Barbiturates are traditionally classified as long-acting (phenobarbital), medium-acting (such as pentobarbital), short-acting (secobarbital), and ultra-short-acting (thiopental). (*See* Test. Dr. Mark Heath; PL's Ex. 4, Margaret Wood, Alistair J.J. Wood, DRUGS AND ANESTHESIA PHARMACOLOGY FOR ANESTHESIOLOGISTS (2d. ed.,Williams & Wilkins); *see also* PL's Ex. 5, Ronald D. Miller, MILLER'S ANESTHESIA, 6th ed. (2005). According to Dr. Heath and MILLER'S ANESTHESIA, the ultra-short-acting drugs are thiopental, methohexital, and thiamylal. By using terms such as short-acting or ultra-short-acting, the classification system refers to the duration of action or how long the barbiturate exercises its control over the human body.

***3** As noted by Dr. Heath, there is another classification of barbiturates which refers to the onset of action of the barbiturate or how soon the maximum effect is felt by the body. According to Dr. Heath, there is a correspondence between the two systems, and the terms ultra-fast and ultra-short refer to the same type of barbiturates, as do the terms fast and short, and as do the terms slow and long. Putting this in a tabular form, we find the following:

1. Ultrafast acting	Ultrashort acting	thiopental, thiamylal, methohexital
2.* Fast acting	Short acting	secobarbital, pentobarbital
3.* Intermediate acting	Intermediate acting	pentobarbital*
4. Slow acting	Long acting	phenobarbital

(*Some systems combine #2 and #3 into one group of intermediate acting drugs) (PL's Rebuttal Expert Disclosure, at 4 (June 25, 2013).) According to Dr. Heath, pentobarbital is either classified "fast," "short," or "intermediate."

Pentobarbital is not used as an anesthetic, according to Dr. Heath, because its effects last too long. Rather, pentobarbital is commonly used in pill form as a treatment for epilepsy and is also used to induce comas in already unconscious patients. Pentobarbital in the doses suggested in Montana's ETM would undoubtedly cause the death of the inmate.

Dr. Heath has used, in a clinical setting, both pentobarbital and thiopental. Dr. Heath has never heard, prior to this case, any reference to pentobarbital being classified as being ultra-fast acting. According to Dr. Heath, the operation of thiopental and pentobarbital is noticeably different. Dr. Heath testified that an administration of thiopental causes a "lights out" effect, where a patient is unable to complete the thought that was in their mind upon the administration of the drug. A patient receiving thiopental would take one or two breaths before the drug exerted its control over the patient. Heath also opined that an individual given pentobarbital would breathe longer, would have various body movements, and would slur words before the pentobarbital took effect. Heath testified that a patient given pentobarbital would physically be able to appreciate the accrual of sleepiness or unconsciousness, while a patient given thiopental would not.

Of significant import to the Court is the manufacturer's insert provided for pentobarbital. (*See* PL's Ex. 7, manufacturer's insert for Nembutal Sodium Solution (the manufacturer's name for pentobarbital).) At page one, the insert states "NEMBUTAL Sodium is a short-acting barbiturate." This comports with the classification stated by Dr. Heath.

Plaintiffs Exhibit 11 contains a compilation of a search engine results completed by Dr. Heath. His research shows that there were 28,600 results produced for a description of thiopental as an ultra-short-acting barbiturate. An additional 42 results were returned for the search phrase of thiopental being an ultra-fast-acting barbiturate. On the other hand, the search engine reported one finding for pentobarbital being an ultra-short-acting barbiturate, and a single finding of pentobarbital being an ultra-fast-acting barbiturate. (PL's Ex. 11, at 3.)

The State produced the testimony of Dr. R. Lee Evans, a doctor of pharmacy and Dean of Pharmacy at Auburn University. In Dr. Evans' original declaration filed in March 2015 and received into evidence as Plaintiffs Exhibit 9, he is "not aware of the origin of the term "ultra-fast acting." (PL's Ex. 9, at 6, ¶ 14.) According to Dr. Evans, pentobarbital could be considered short acting, and thiopental, ultra-short acting. (Id.) Dr. Evans opined that there is no meaningful difference between pentobarbital and thiopental in the time it takes to render a person comatose. (Id., at 7, ¶ 15.) However, Dr. Evans noted that onset of action for pentobarbital is under a minute, while for thiopental, the onset of action could be ten to forty seconds. (Id.)

*4 Until the trial of this action. Dr. Evans had not testified that pentobarbital was an ultra-fast-acting barbiturate. He did so testify at trial. However, the Court struck that conclusion because it did not comport with his prior discovery responses or declarations filed with the Court. (*See* PL's Exs. 9, 10.) At the trial of this matter, Dr. Evans indicated that the onset of pentobarbital was under one minute. However, on December 10, 2012, Dr. Evans indicated "[thiopental is an onset of about a half to one minute, duration of a little less than 30 minutes. Pentobarbital is onset three to four minutes with a duration that is somewhat longer. That's the primary difference." (PL's Ex. 14, *Pardo v. Palmer*, Case No. 3:12-cv-1328-J-32JBT (M.D. Fl. Dec. 10, 2012), Test. Roswell Lee Evans, Jr., at 68).) This testimony stands in stark contrast to what Dr. Evans stated at the trial this matter.

Dr. Evans pointed out that there is no question that pentobarbital is fast acting. For example, Plaintiffs Exhibit 7 — the package insert for pentobarbital — indicates that "the onset of action ranges from almost immediate...." (PL's Ex. 7, at 2.) See also Defendant's Exhibit L, a TOXNET reference which indicates that the onset of thiopental and pentobarbital is "almost immediate. (Def.'s Ex. L, at 16.) TOXNET is a collection of databases operated by the National Library of Medicine. See also Defendant's Exhibit N, a *Drugs.com* reference which indicates that the onset of pentobarbital is immediate. (Def.'s Ex. N, at 1.) Thus, there is no question that pentobarbital is fast acting. The question remains as to whether it is ultra-fast acting.

Dr. Evans did cite to references that indicate that if the onset of action of a drug is less than a minute, it can be considered ultra-fast acting. (*See.* e.g., PL's Ex. Q, TOXNET reference, at 12; PL's Ex. R, Micromedic reference, at 4 ("ultra-fast acting has an onset of one minute or less.).) The Court notes that at page 1 of Exhibit R, pentobarbital is listed as being "short acting," not ultra-short acting.

These references to pentobarbital being ultra-fast acting are consistent with Dr. Heath's finding *some* sources refer to pentobarbital as being ultra-fast acting. However, that must be compared with the greater weight of authority that indicates that pentobarbital is not in the class of drugs considered to be ultra-fast acting.

Dr. Evans did indicate that, in his opinion, pentobarbital and thiopental are almost identical. Both, in his current opinion, reach maximum effect in less than one minute's time. However, Dr. Evans did acknowledge that thiopental is a little quicker to get to the brain because pentobarbital is not as lipid soluble.

In making its decision, this Court has had to weigh the evidence presented by Dr. Evans versus Dr. Heath. Supporting Dr. Heath's testimony are standard pharmacology for anaesthesiologists text books (PL's Exs. 4, 5) and Dr. Heath's own consistent testimony. Also supporting Dr. Heath's position is the significant research that classifies thiopental as being ultra-short acting

(ultra-fast acting) and not so classifying pentobarbital, except for a few scattered references. (*See* PL's Ex. 11.) Also of utmost import is the manufacturer's insert for pentobarbital (PL's Ex. 7), which classifies pentobarbital as a short-acting barbiturate. Also crucial in this weighing the Court has undertaken is the fact that in the *Pardo v. Palmer* case, in testimony given not three years ago, Dr. Evans testified that pentobarbital's onset of action is three to four minutes as opposed to the less than one minute referred to in his testimony in this case. This is not to in any way insinuate that Dr. Evans is not a credible witness. However, it is a factor when weighing the evidence which shows by a relatively overwhelming nature that, while pentobarbital may operate in a fast nature, it is not ultra-fast as is required to comply with Montana's execution protocol. Thus, through this weighing process, this Court concludes that pentobarbital is not an ultra-fast-acting barbiturate.

*5 From the foregoing Findings of Fact, the Court enters the following:

CONCLUSIONS OF LAW

1. Jurisdiction and venue are proper in this Court.

2. By using the limiting term "ultra" in the phrase "ultra-fast-acting barbiturate" in Montana Code Annotated § 46-19-103(3), the legislature limited the State of Montana to using only drugs in the fastest category of barbiturates, namely thiopental, methohexital, and thiamylal. Under the express terms of the statute, the State of Montana is not allowed to use the "fastest acting barbiturate available," or a "relatively fast-acting barbiturate," only an "ultra-fast-acting barbiturate," meaning drugs from the fastest class of barbiturates.

3. Had the legislature intended to give the State of Montana latitude in what drugs to use, it could have used much more general language in the statute authorizing execution, as many other states have now done. Pentobarbital cannot properly be classified as "ultra-fast-acting," since there is another class of drugs that is faster. Whether those drugs are currently available is not an issue the Court can resolve for the State. The State's remedy is to ask the Legislature to modify the statute to allow the use of pentobarbital or other slower acting drugs.

4. The State of Montana has modified the execution protocol several times during this litigation and has had many opportunities to return to the legislature to modify the language which limits the State of Montana to "ultra-fast-acting barbiturates," but has chosen not to.

5. Courts may not legislate through judicial interpretation of statutes. *Albinger v. Harris*, 2002 MT 118, ¶ 38, 310 Mont 274, 8 P.3d 711 (It is not the province of this court or any other court to assume to legislate by judicial interpretation, and to create in favor of any individual or any class of people an exception to the limitation set by the legislature.). A court cannot second-guess and substitute its judgment for that of the legislature or insert what has been omitted. *State Bar of Mont. v. Krivec*, 193 Mont. 477, 481, 632 P.2d 707, 710 (1981). Indeed, Montana law regarding statutory' interpretation begins with Montana Code Annotated § 1-2-101, which states: [i]n the construction of a statute, the office of the judge is simply to ascertain and declare what is in terms or in substance contained therein, not to insert what has been omitted or to omit what has been inserted." In Montana Code Annotated § 46-19-103, the legislature mandates use of an "ultra-fast-acting barbiturate," and the Department of Corrections plan to use a drug which is, without dispute, not classified as an ultra-fast-acting barbiturate. Given these facts, the Court must find an impermissible inconsistency between the legislative mandate and the Department of Corrections' exercise of that mandate. Scrupulous adherence to statutory mandates is especially important here given the gravity of the death penalty.

Accord *In re Ohio Execution Protocol Litigation*, 840 F. Supp. 2d 1044 (S.D. Ohio 2012).

From the foregoing Findings of Fact and Conclusions of Law, the Court enters the following:

ORDER

*6 The State of Montana is hereby ENJOINED from using the drug pentobarbital in its lethal injection protocol unless and until the statute authorizing lethal injection is modified in conformance with this decision.

DATED this 6 day of October 2015.

<<signature>>

JEFFREY M. SHERLOCK

District Court Judge

pcs: Ronald F. Waterman

Jim Taylor

Gregory A. Jackson

Michael Donahoe

Timothy C. Fox/C. Mark Fowler/Pamela P. Collins/Jonathan M. Krauss, Robert Stutz

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SOUTH DAKOTA PENITENTIARY

KITE - REQUEST SLIP

October 1, 2019 20

Inmate RHINES, Charles No. 15036

Cell No. A-3-55 Works Pending

Desires an Audience with DARIN YOUNG: Warden: South Dakota State Penitentiary

Give Reason — Private Business Not Sufficient

As per South Dakota Codified Law 23A-27A-32.1, I am hereby notifying you that I have selected the method of execution which was in effect at the time I was sentenced to death:

To: Wit: January 29, 1993

Charles R. Rhines

STATE OF SOUTH DAKOTA
COUNTY OF MINNEHAHA

On October 1, 2019, Charles R. Rhines personally appeared before me, whose Identity I proved on the basis of Incarceration, to be the signer of the above document, and he acknowledged that he signed it.

NOTARY PUBLIC

My Commission Expires: 5/4/22

S E A L

KEITH R. THANSON
NOTARY PUBLIC
SOUTH DAKOTA
SEAL SEAL

OFFICER

SECOND ITTERATION, SUPERCEDES ALL OTHERS NOT SO MARKED

SOUTH DAKOTA PENITENTIARY

KITE - REQUEST SLIP

October 4, 2019 20 ____

Inmate RHINES, Charles, R. No. 15036

Cell No. A-3-55 Works Pending

Desires an Audience with DARIN YOUNG: Warden: South Dakota State penitentiary

Give Reason — Private Business Not Sufficient

As per South Dakota Codified Law 23A-27A-32.1, I am hereby notify-you that I have selected the method of execution which was in effect at the time I was sentenced to death on January 29, 1993. To Wit: The Two Drug Protocol of a Lethal Dose of An Ultra-short Acting Barbiturate and a Chemical paralytic agent.

Charles R. Rhines

STATE OF SOUTH DAKOTA
COUNTY OF MINNEHAHA

On October 4, 2019, Charles R. Rhines personally appeared before me, whose Identity I proved on the babsis of Incarceration, to be the signer of the above document, and he acknowledged that he signed it.

S E A L NOTARY PUBLIC

My Commission Expires: 7-17-2024

TAYLOR YOST
NOTARY PUBLIC
SOUTH DAKOTA
SEAL SEAL
OFFICER
My Commission Expires 7-17-2024

1620-DOC | M - 8

GT GreenbergTraurig

Caroline J. Heller
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October 15, 2019

VIA EMAIL AND USPS

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Sioux Falls, South Dakota 57117

paul.swedlund@state.sd.us
Paul Swedlund, Esq.
Assistant Attorney General
1302 East Highway 14, Suite 1
Pierre, South Dakota 57501

Re: Charles Rhines, SDDOC #15036

Dear Warden Young and Mr. Swedlund:

We represent Charles Russell Rhines. As you know, on June 25, 2019, Judge Robert Mandel issued a warrant of execution for Mr. Rhines for between November 3 and November 9, 2019. Pursuant to S.D.C.L. § 23A-27A-32.1, on a Kite-Request Slip dated October 1, 2019 and an amended Kite-Request Slip dated October 4, 2019, Mr. Rhines elected to be executed pursuant to the manner provided by South Dakota law at the time of his sentence; to wit, "by the intravenous administration of a lethal quantity of an ultra-short acting barbiturate in combination with a chemical paralytic agent and continuing the application thereof until the convict is pronounced dead by a licensed physician according to accepted standards of medical practice." SL 1984, ch 181.

We write to request that you confirm Mr. Rhines's request will be honored, and that he will be executed by the intravenous administration of an ultra-short-acting barbiturate. We also request that you identify which one of the three ultra-short-acting barbiturates will be used to execute Mr. Rhines: sodium methohexital; sodium thiamylal, or; sodium thiopental.

Further, with respect to the ultra-short-acting barbiturate that is identified for use in Mr. Rhines's execution, we request that you provide the following information: (1) whether it was manufactured or compounded; (2) if manufactured, the identity of the country, or the State in the United States, from whence it was imported/obtained; (3) if compounded, the date on which any compounding was performed and whether it was performed by a licensed pharmaceutical company or pharmacist; (4) any testing conducted to ensure such drug's or drugs' (including the API) potency, purity, and integrity, including the tests conducted, the date(s) of same, and the results; (5) whether

such testing was performed by a licensed pharmaceutical company, pharmacy, or pharmacist, and whether such pharmaceutical company, pharmacy, or pharmacist has been subject to disciplinary action or cited for violations of state or federal laws or regulations by either state or federal entities; (6) the "beyond use" or "expiration" date of such drug (including the API), and when and how such date(s) was/were established; (7) the date on which any API was ordered and received and how it was stored during transport and since it has been in DOC's possession, and; (8) how the drug has been stored since the time of compounding or importation.

We also request that you confirm a licensed physician will be present at Mr. Rhines's execution to pronounce death.

Please provide this information no later than October 18, 2019 to my email address, hellerc@gtlaw.com. I look forward to your timely response.

Sincerely,

/s/ Caroline J. Heller

Caroline J. Heller
Greenberg Traurig, LLP
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New York, New York 10166
Telephone (212) 801-2165
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cc: Jason Ravnsborg, Esq. *(via email and U.S. Mail)*
Charles Rhines *(via U.S. Mail)*

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JASON R. RAVNSBORG
ATTORNEY GENERAL

CHARLES D. McGUIGAN
CHIEF DEPUTY ATTORNEY GENERAL

October 17, 2019

VIA EMAIL AND USPS

Caroline Heller
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MetLife Building
200 Park Avenue,
New York NY 10166
hellerc@gtlaw.com

Dear Ms. Heller:

I am in receipt of your letter regarding Mr. Rhines' request for execution pursuant to the combination of drugs provided by statute at the time of his execution. The DOC will follow the law. The ultra-short acting barbiturate the state intends to use is pentobarbital.

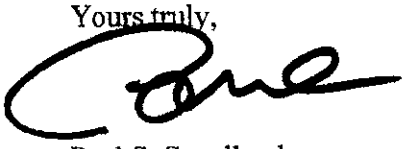
Recent case authorities have quite emphatically and unequivocally stated that "[n]either the 5th, 14th or 1st Amendments afford [inmates] the broad right 'to know where, how and by whom the lethal injection drugs will be manufactured," as well as 'the qualifications of the person or persons who will manufacture the drugs, and who will place the catheters." *Wellons v. Georgia Department of Corrections*, 754 F.3d 1260, 1267 (11th Cir. 2014). Consistent with this authority, with regard to your questions related specifically to the pentobarbital:

(1) The DOC will not disclose whether the drug is "manufactured" or "compounded." The DOC will advise you that the barbiturate is produced for and used by medical practitioners in the United States. Obviously, drugs used in the United States must be produced in an FDA-approved facility according to accepted GMP.
(2) The DOC will not disclose the country or state of origin of the drug.
(3) No drug has yet been compounded and, consistent with past practice, will not be compounded until 24 hours prior to the execution. Per DOC practice, compounding is performed by qualified persons, as demonstrated by past testing and the efficacy of the drugs in the Robert, Moeller and Berget executions.
(4) The DOC will not disclose testing until after the execution.
(5) Per DOC practice, all testing is performed by a qualified independent lab.

(6) The DOC will not disclose any "beyond use" or "expiration" date of the drugs it intends to use as this could identify the source. The DOC will advise you that no drug it intends to use is beyond the "beyond use" or "expiration date" set by the manufacturer.
(7) The DOC will not disclose the date any of its drugs were ordered or received.
(8) All drugs have at all times been stored in accordance with manufacturer instructions while in the DOC's control.

Finally, I can confirm for you that a licensed physician will be present at Mr. Rhines' execution.

Yours truly,



Paul S. Swedlund
Assistant Attorney General

PSS/rar

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Harwood Nuss' Clinical Practice of Emergency Medicine, Sixth Edition
October 2014 Update

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SECTION XXIII. Toxicology

PART 4. Anticonvulsants and Sedative-Hypnotics

Chapter 307 Barbiturates

Samuel J. Stellpflug

Carson R. Harris

Image 1 within document in PDF format.

Introduction

Barbiturates are central nervous system (CNS) depressants used as anxiolytics and hypnotics, for the induction of anesthesia, and as anticonvulsants. They act by enhancing γ-aminobutyric acid (GABA) inhibition in excitable tissues mainly in the CNS, but also to a lesser extent in skeletal muscle, smooth muscle, and heart. Barbiturates bind to the $GABA_A$ receptor complex, augment the chloride current and also increase the duration of channel opening, hyperpolarizing the cells and thereby inhibiting depolarization. This enhances the activity of GABA, potentially acting synergistically with other GABA-active agents. That being said, especially in high doses, barbiturates can stimulate $GABA_A$ receptors directly even in the absence of GABA. In addition, phenobarbital also decreases the paroxysmal firing of nerve cells by an unknown mechanism along with GABA stimulation. Barbiturates are divided into four distinct categories based on their duration of action: (1) ultrashort-acting, (2) short-acting, (3) intermediate-acting, and (4) long-acting barbiturates (Table 307.1).

TABLE 307.1 Barbiturate Kinetic Data

Drug	Usual Adult Dose (mg)	Onset (hr)	Peak (hr)	Duration (hr)	Half-Life (hr)	Percentage Protein Binding	Volume of Distribution (L/kg)
Ultrashort-Acting							
Thiopental	50–75	<0.1	<0.1	<0.5	3–11	72–86	1.4–6.7

Methohexital	50–120	<0.2	<0.2	<0.5	1–4	83	1–2.6
Short-Acting							
Pentobarbital	50–200	0.25	0.5–2	>3–4	15–50	45–70	0.5–1
Secobarbital	100–200	0.25	1–6	>3–4	19–34	45–70	1.5–1.9
Intermediate-Acting							
Amobarbital	65–200	<1	2	>4–6	10–40	59	0.9–1.4
Aprobarbital	40–160	<1	12	>4–6	14–34	20	—
Butabarbital	100–200	<1	0.5–1.5	>4–6	66–140	26	—
Butalbital	100–200	—	2	—	61	—	—
Long-Acting							
Mephobarbital	50–100	0.5–2	—	>6–12	10–70	40–60	2.6
Phenobarbital	100–320	<0.1	0.5–2	>6–12	80–120	20–50	0.5–0.9
Primidone	300–1,000	—	—	—	3.3–12	20–30	0.4–1

The ultrashort-acting barbiturates (thiopental, methohexitol) are highly lipophilic, rapidly entering the CNS, and thus their primary use is anesthesia induction. Overdose of this group of barbiturates is typically iatrogenic as these agents are available only as intravenous formulations.

Short-acting barbiturates (pentobarbital, secobarbital) were extensively prescribed in the 1960s and 1970s as sedative–hypnotics. In the late 1970s, nearly 70% of all suicides by drug ingestion involved barbiturates (1). Their use markedly declined over the subsequent decades with the introduction of newer and safer sedative–hypnotics and anticonvulsants. Short-acting barbiturates have a lower therapeutic margin than the benzodiazepines, more frequent development of tolerance, and a greater potential for abuse. Moreover, drug–drug interactions are numerous, with more than 150 drugs and herbal interactions.

Intermediate-acting barbiturates (amobarbital, aprobarbital, butabarbital, butalbital) are most commonly found in combination analgesic medications (Fiorinal, Fioricet, etc.) containing butalbital to treat tension–vascular headaches. Amobarbital and butabarbital have been replaced by benzodiazepines, and the use of sodium amobarbital as "truth serum" has allegedly long been abandoned.

Long-acting barbiturates (phenobarbital and primidone) are still used to treat epilepsy. They have lower lipid solubility than short-acting barbiturates, causing them to accumulate more slowly in tissue and to have peak effects that are delayed for several hours. Onset of symptoms usually occurs within 1 to 2 hours, and the peak effect may occur more than 10 hours after ingestion (2).

Pharmacokinetic data are summarized in Table 307.1. Barbiturates are well absorbed from the intestinal tract, except for mephobarbital, which is about 50% absorbed. The onset of action varies from 10 to 60 minutes depending on the agent and formulation. Food in the stomach decreases the rate of absorption but not the total amount absorbed. In overdose, the onset and peak of symptoms may be delayed. Ultrashort-acting barbiturates are administered intravenously, with initial effect seen within 1 minute and duration of effect of 10 to 30 minutes. Short-acting barbiturates are almost entirely metabolized in the liver to inactive metabolites that are excreted in the urine as glucuronides. However, liver metabolism of barbital, phenobarbital, primidone, and phenylethylmalonamide is limited because of lower lipid–water partition coefficients; so urinary excretion accounts for 95%, 25% to 35%, 15% to 42%, and 95% of the elimination of these agents, respectively. Phenobarbital undergoes enterohepatic recirculation, which contributes to its long half-life.

Barbiturates induce cytochrome P450 isozymes, including CYP2C9, CYP2C19, CYP2C8, and CYP3A4, thus enhancing elimination of other drugs metabolized by these enzymes. Although phenobarbital is a strong inducer of cytochrome P450, it does not induce its own metabolism and appears to have a longer half-life with chronic use (2). Barbiturates also induce δ-aminolevulinic acid (ALA) synthetase, leading to increase production of δ-ALA, a precursor of porphobilinogen. This may precipitate attacks of acute intermittent porphyria and porphyria variegata in susceptible individuals; thus porphyria, although uncommon, is a contraindication to barbiturate use.

Clinical Presentation

Significant ingestions are now rare but still life-threatening and typically present with depressed level of consciousness ranging from lethargy to deep coma. Patients may also have respiratory depression, which is responsible for most deaths. With the short and intermediate-acting barbiturates, symptoms usually begin within 1 hour of ingestion, and peak effects are seen within 4 to 6 hours. Patients with chronic lung disease and sleep apnea are more susceptible to severe respiratory depression, even at therapeutic doses. Other clinical findings in overdose include hypothermia, sluggish pupillary light reflex, nystagmus, and diminished bowel sounds. Bullous skin lesions, occasionally referred to as "coma blisters," may appear on shoulders, hands, buttocks, and knees, where the body weight has caused pressure ischemia to the skin. About 40% of patients with severe toxicity also develop aspiration pneumonia (3). Cardiovascular collapse may manifest with bradycardia or tachycardia, hypotension, and shock. Drug-induced venous dilatation with consequent pooling of blood and reduction in effective vascular volume can lead to shock. Prolonged coma increases the risk for hypothermia, venous thromboembolism, rhabdomyolysis, and acute tubular necrosis secondary to shock. The acid–base abnormality, especially in a severe overdose, is likely to be a mixed respiratory and metabolic acidosis from hypoventilation and lactate. Coingested ethanol, benzodiazepines, and barbiturates have synergistic effects, and there is increased risk even when lesser amounts are ingested. Withdrawal symptoms occur when the drug is discontinued after chronic use of barbiturates leads to tolerance. Tolerance can develop with prolonged use and abuse, leading to a progressive increase in doses needed to achieve the desired effect. The withdrawal state is similar to ethanol withdrawal.

Laboratory abnormalities include hypoglycemia, electrolyte disturbances, and alterations in acid–base and fluid balance. The creatine phosphokinase (CPK) may be elevated if the patient has been comatose and immobile for a prolonged period. A chest radiograph may show aspiration pneumonia or pulmonary edema. The electrocardiogram (ECG) is usually normal but in severe toxicity may show bradycardia or tachycardia. The electroencephalogram (EEG) shows diffuse slowing during barbiturate-induced coma.

The amount of drug required to produce toxic symptoms can vary significantly depending on patient tolerance (4). The therapeutic doses for common barbiturates are given in Table 307.1. For nonaddicted patients, the toxic dose for short-acting barbiturates is about 3 to 6 g (5 to 8 mg/kg in pediatrics) and for phenobarbital is about 6 to 9 g (8 mg/kg in pediatrics). Patients with physical dependence on barbiturates may tolerate higher doses. Geriatric patients may be much more sensitive to drug effects and can present with significant findings at lower doses. This may be attributed to decreased enzyme activity in the elderly and the higher likelihood of drug interactions and comorbidities in this population (5).

Differential Diagnosis

Other sedative–hypnotic agents, opiates, or alcohol intoxication should be included in the differential. Similar presentations may be encountered with γ-hydroxybutyrate, clonidine, skeletal muscle relaxants, and imidazoline decongestants (e.g., oxymetazoline). An overdose of psychiatric medications such as cyclic antidepressants, trazodone, phenothiazines, and antipsychotics also cause sedation and respiratory depression. Carbon monoxide poisoning, head trauma, CNS infections, sepsis, hypoglycemia, electrolyte abnormalities, and hypothermia may present similarly to barbiturate overdose and must be considered.

ED Evaluation

The initial history is not always obtainable or reliable but, when possible, one should attempt to identify the drug ingested, the approximate amount ingested, the time of ingestion, and the reason for the ingestion (i.e., accidental or intentional). The physical examination should focus on the vital signs, including rectal temperature and oxygen saturation, and the degree of CNS depression. Other findings on examination may point to unsuspected trauma or other conditions in the differential. Absence of bowel sounds suggests ileus; suprapubic percussion or bedside ultrasound may detect a distended bladder.

After initial stabilization, physical examination, bedside fingerstick glucose and basic metabolic panel (electrolytes, blood urea nitrogen, creatinine) should be ordered. Testing is generally not helpful in the diagnosis but can detect other condition and may help general supportive care. These include breath or blood alcohol concentration, and an acetaminophen concentration should be considered, as with most ingestions, and especially since it is contained in some preparations of barbiturate combination products. A salicylate concentration, and an ECG are reasonable, however will not be diagnostic of barbiturate ingestion. A complete blood count is almost always quite unhelpful. A total CPK concentration is reasonable, especially if there is concern for prolonged patient down time. With signs of acid–base imbalance blood gas analysis (venous if patient is well perfused, arterial if the patient has hemodynamic compromise) can help in the analysis. Chest radiography may reveal normal findings, however pulmonary edema and signs of aspiration are common. As with other causes of altered mental status, head computed tomography and lumbar puncture for testing is sometimes necessary to rule out causes other than ingestion. In the case of prolonged ED stay time, EEG can be obtained in the nonresponsive patient, but should not be used to rule out barbiturate overdose, as the EEG can reflect brain death in this setting.

Barbiturate-specific testing does not impact decision making in the emergency department (ED). Clinical signs of barbiturate overdose should dictate management rather than relying on serum or urine concentrations. Rapid urine immunoassay testing ("drug screen") for qualitative presence of barbiturates is relatively reliable for exposure (more reliable than other drug classes tested by urine immunoassays), but is not particularly helpful because the exposure could have been hours or days prior to arrival and may not have anything to do with the clinical presentation. There can be an argument for never ordering rapid urine immunoassay screens in the workup of overdoses. Blood concentrations are not available at many facilities, and plasma concentrations may not accurately reflect brain concentrations, as tissue solubility changes with fluctuation in pH. However, quantitative testing can be done with more advanced techniques on serum and urine with chromatography combined with mass spectrometry, and this should be considered in cases where child abuse, elder abuse, and drug-facilitated sexual assault are concerns. This may also prove beneficial in cases of clinical brain death without another reasonable cause.

Key Testing

- There are no specific tests for typical cases.

- Qualitative barbiturates levels may be helpful to document in cases of child abuse, elder abuse, date rape, and falsely presumed brain death.

ED Management

The treatment of barbiturate toxicity is primarily supportive. Patients with depressed respirations and altered mental status require airway management and intubation to support breathing and protect the airway. Blood pressure should be supported initially with intravenous crystalloid, administering 10 to 20 mL/kg boluses barring preventive comorbidities, and with close monitoring of response. The core temperature should be checked and rewarming instituted if needed. Management decisions should be based on the patient's clinical condition rather than on blood drug levels.

For serious phenobarbital overdose, multidose activated charcoal (MDAC) leads to more rapid recovery and a significant reduction in elimination half-life (6, 7). The usual dose is 1 g/kg, followed in 2 to 4 hours by 0.5 g/kg in aqueous solution and alternating for 24 hours. Sorbitol-based charcoal has fallen out of favor and aqueous-based charcoal should be used.

Barbiturates are weak acids, and theoretically increasing the urine pH increases the fraction of ionized drug in the urine and thus decreases the amount of nonionized drug available for passive tubular reabsorption. This is most well established for phenobarbital and not well for other barbiturates; urine alkalinization can increase the renal clearance of phenobarbital up to 10-fold and can shorten the half-life by one-half to two-thirds (8). The best evidence for urinary alkalinization even in the context of phenobarbital is inferior to MDAC. There are no data to support the use of urine alkalinization for overdose with

short- and intermediate-acting barbiturates (8). Urine alkalinization is contraindicated in patients with renal insufficiency and cerebral or pulmonary edema.

Hemodialysis may be used in life-threatening barbiturate overdose (9). Early notification of the nephrology service can expedite initiation of treatment. Both charcoal hemoperfusion and high-flux hemodialysis enhance the elimination of all barbiturates. High-efficiency hemodialysis with a high blood flow rate may be superior to hemoperfusion which is also difficult to accomplish and has more inherent complications than dialysis (10). As these procedures have some risk, their use should be reserved for patients with pulmonary edema, cerebral edema, or shock unresponsive to supportive measures.

Critical Interventions

- Provide appropriate airway management with supplemental oxygen.
- Treat hypotension with intravenous fluids, and vasopressors if necessary.
- Administer MDAC, especially for phenobarbital poisoning.
- Consider early hemodialysis for severe overdoses, especially phenobarbital ingestions.

Disposition

Nephrology consultation should be obtained when hemodialysis is being considered. Awake patients who have ingested short-acting barbiturates and whose symptoms are mild and are not progressing may be observed for 4 to 6 hours and then evaluated for psychiatric admission or discharged. For patients who have ingested long-acting barbiturates, the observation period should be based on both barbiturate levels *and* clinical symptoms. If quantitative serum concentrations are available (as with phenobarbital), serial concentrations can be obtained and the patient observed until concentrations peak and are decreasing, although this should likely be done during inpatient stays rather than in the ED. Patients with abnormal vital signs or significant CNS depression should be admitted to an intensive care unit. Patients who require intensive care or extracorporeal elimination may need to be transferred if necessary. Advanced life-support measures to stabilize the patient and activated charcoal given prior to transfer. Suicide evaluation is indicated for all suspected suicide attempts when the patient is alert enough to be interviewed.

Common Pitfalls

- Failure to check for hypoglycemia as a cause of altered mental status.
- Failure to protect the airway in a somnolent patient.
- Failure to repeat MDAC and failure to check bowel sounds.
- Failure to consider barbiturate withdrawal in patient with seizures.

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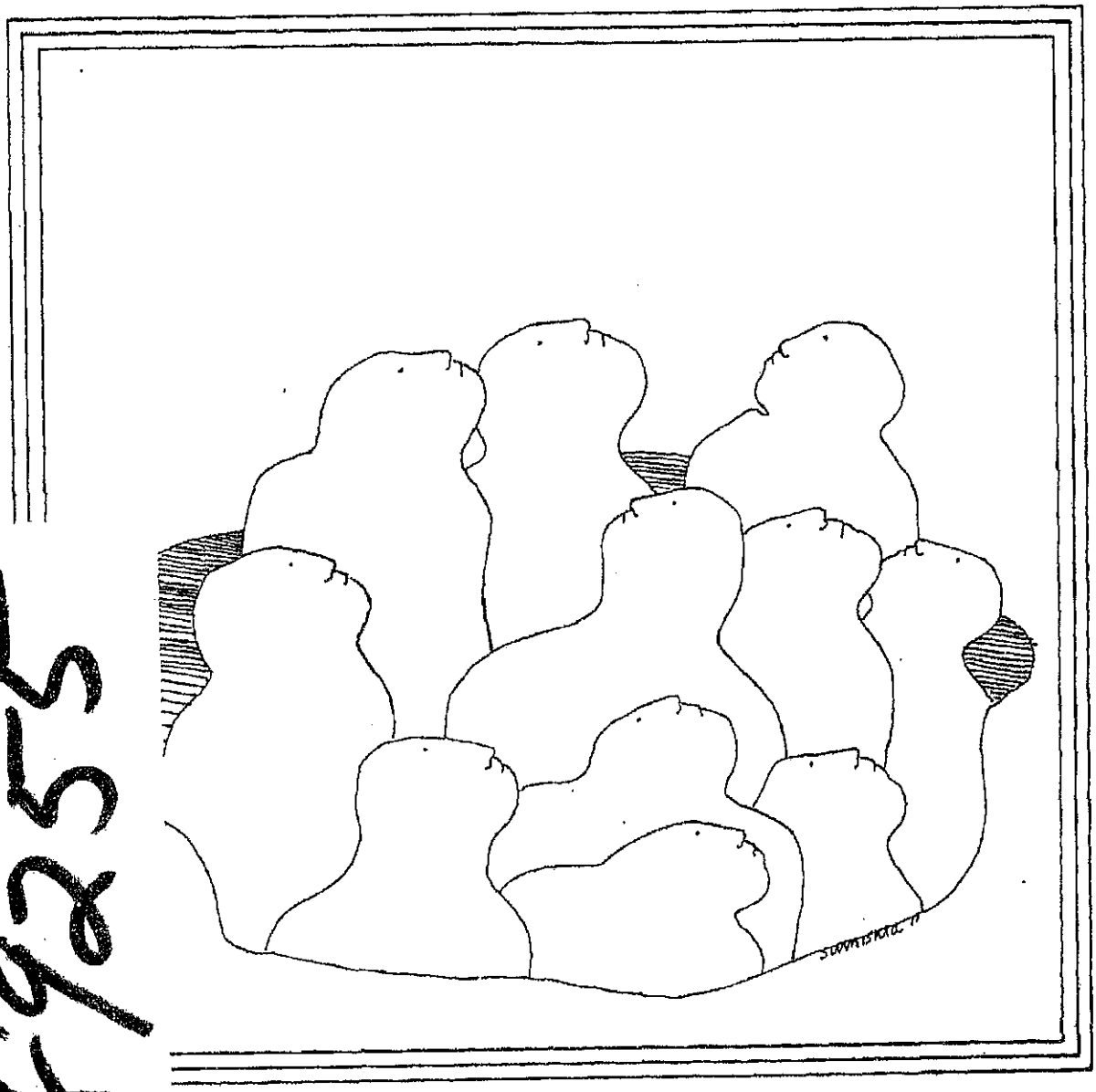

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Research Issues 26

Guide to Drug Abuse Research Terminology

Edited by

Jack E. Nelson

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1982

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Alcohol, Drug Abuse and Mental Health Administration

National Institute on Drug Abuse
5600 Fishers Lane
Rockville, MD 20857

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THE EDITORS: Jack E. Nelson, Helen Wallenstein Pearson, and Mollie Sayers, of Metrotec, Inc., Washington, D.C., participated in developing this publication for the National Institute on Drug Abuse under Contract No. 271-80-3720. Thomas J. Glynn, Ph.D., Division of Research, NIDA, served as co-editor in development of the materials, and as NIDA project officer.

CONTENTS

PREFACE

The first volume of the Research Issues Series was published in November 1974. Since that time, 29 volumes have been published in this series by the Division of Research, National Institute on Drug Abuse.

The primary objective of the Research Issues Series is to provide both lay and professional readers comprehensive, yet succinct, information on topics of central interest to the drug abuse field. The approach frequently used has been to provide abstracts of the relevant literature on a particular topic. In other cases materials have been developed and written especially for the series.

This volume falls in the latter category and addresses the need for a reference guide to the terminology of the drug abuse field. It is based upon a draft compiled by Gregory Austin of the Southern California Research Institute and reviewed by an editorial board of drug experts whose names and affiliations are listed below. The board members have not reviewed this extensively revised final edition, and the editors, while gratefully acknowledging the seminal contribution of the board members, take major responsibility for any imprecision or errors that may occur.

INTRODUCTION

The drug abuse field consists of an amalgam of medical, social, and psychological disciplines. This, in turn, reflects upon its terminology, which ranges from colorful slang to advanced biomedical nomenclature. The breadth of drug abuse terms is thus vast and varied--from 4-letter slang to 10-syllable chemicals and from conceptualizations based on street-wise hip to those taken from advanced molecular biomedicine. For example, a sociologist in the drug field may be found observing a street dude who is taking care of business hussling bags of China White so he can cop some real good snow; an epidemiologist may be concerned about the balloon effect likely to occur with implementation of a supply reduction strategy; a doctor may prescribe nepenthes, soporifics, or ergogenics to help patients cope; and a biochemist may be interested in studying the dose-response relationship of cholinergic agents on the parasympathetic nervous system. A vast array of drug users, dealers, clinicians, researchers, teachers, theorists, politicians, and others related to the drug abuse field have produced a large lexicon of terms that vary from the simple, but often clever, to the ultracomplex.

Many drug terms are ambiguous, especially slang, and their meanings may vary over time (e.g., blues, black beauties, white stuff, kif, narcotic). Other terms may be deadly concise but are often confusing to lay readers and professionals alike (e.g., endorphin/enkephalin, agonist/antagonist, analgesic/anesthetic, congener/ligand). There frequently are slang and scientific terms for the same concept (e.g., to insufflate/to blow, to inject/to shoot up, diacetylmorphine hydrochloride/horse, smack, or junk). Some terms have exotic sounding names (e.g., sinsemilla, khat, etonitazene), and others though widely used are grossly imprecise (e.g., high, addiction, tolerance, drug abuse, treatment).

Explosive discoveries in the field are producing new and rapidly evolving terms, many of which are not currently defined in dictionaries or other standard reference works. These terms are defined only in the research literature where they are being discussed and debated. Examples of this type include the constantly expanding list of newly identified endogenous agonists, the newer urinalysis screening techniques, and the newer approaches to treatment.

This Guide to Drug Abuse Research Terminology attempts to bring a major segment of the myriad assortment of terms found in the drug abuse field under one cover and to present in glossary form definitions of many of the drug abuse terms that have to date been described only in the research literature. It has been designed and written to serve as a convenient guide for those requiring brief, nontechnical explanations of drug abuse terms. It can, however, also be used as a sourcebook for those interested in exploring drug abuse concepts in further depth through the numerous reference citations included and the cross-references to NIDA's Research Issues Series.

In selecting terms for inclusion, a careful analysis of the field's terminology was undertaken. A primary source was the abstracts and the indexes of the NIDA Research Issues Series. Now covering over 1,000 documents and 26 volumes, the series deals with almost every aspect of human drug research. In the final selection process, four principal criteria were used: (1) the frequency with which a term appeared in the literature, (2) the importance of the term to the field, (3) the extent to which a term might be unfamiliar to individuals outside certain disciplines, and (4) the extent to which confusion or ambiguity surrounded a term's definition or usage.

The definitions provided are intended to reflect preferred or common use at present. They were developed either from the professional drug research literature, particularly that covered by the Research Issues Series, or from specialized dictionaries in the field and in related disciplines. Whenever possible, definitions were drawn directly from the research literature. In these instances, since it was not possible to cite all the materials pertaining to a particular term, topic, or concept, at least one source is cited for the interested reader.

USE OF THE GUIDE

The guide consists of the main body of definitions and appendixes containing a general drug classification scheme, a comprehensive collection of slang terms for selected drugs, and a list of the acronyms and abbreviations frequently encountered in the drug abuse field and described in the main body of this volume.

Terms are listed in alphabetical order. Drugs are defined under their generic names. Brand names (as listed in the 1981 Physician's Desk Reference) are presented in the body of the drug definitions. Users starting out with brand names only are referred to appendix A, where both brand and generic names for all of the drugs contained in this volume appear.

Drug definitions also indicate the drug's classification and common slang names. A complete classification scheme for the drugs contained in this guide is presented in appendix A. Only the most common and currently used drug slang terms are included in the body of the definition. If the drug is one of those for which a comprehensive list of slang terms is presented in appendix B, the reader is referred there.

The inclusion of nondrug slang terms in this volume was done sparingly for the reasons that (1) there are numerous, well-done drug slang dictionaries currently in existence, and (2) the primary emphasis of the guide is on research-literature-based terminology. Only those slang terms are included that are frequently encountered in the literature and/or are conceptually important in understanding drug abuse issues (e.g., rush, booting, chipping). Readers interested in defining drug slang terms are referred to the bibliography in appendix B.

Terms that appear in the body of definitions with all letters capitalized are defined elsewhere in the guide. Terms appearing in the guide that may be useful to the reader of a particular definition are noted at the end by "See. . . ." or "See also. . . ."

Research Issues Series Volume 27, Guide to the Drug Research Literature, is a cumulative index to the first 26 volumes in the series. If the term being defined is indexed in Research Issues Series Volume 27, the term or related term, the page number, and the number of literature reference entries to be found there are listed in parentheses at the end of the definition. Terms in the guide that are listed in volume 27 are indicated at the end of individual entries in the following manner:

(RIS 27:300--33 entries)

This entry, for example, refers to Research Issues Series No. 27:page 300--33 entries listed. A reference may also be included for a term that is different from but related to the term being defined. For example:

term: anesthetics
reference: (anesthetic uses, RIS 27:304--8 entries)

The format components for the definitions are explained and demonstrated graphically in figure 1 on the following page.

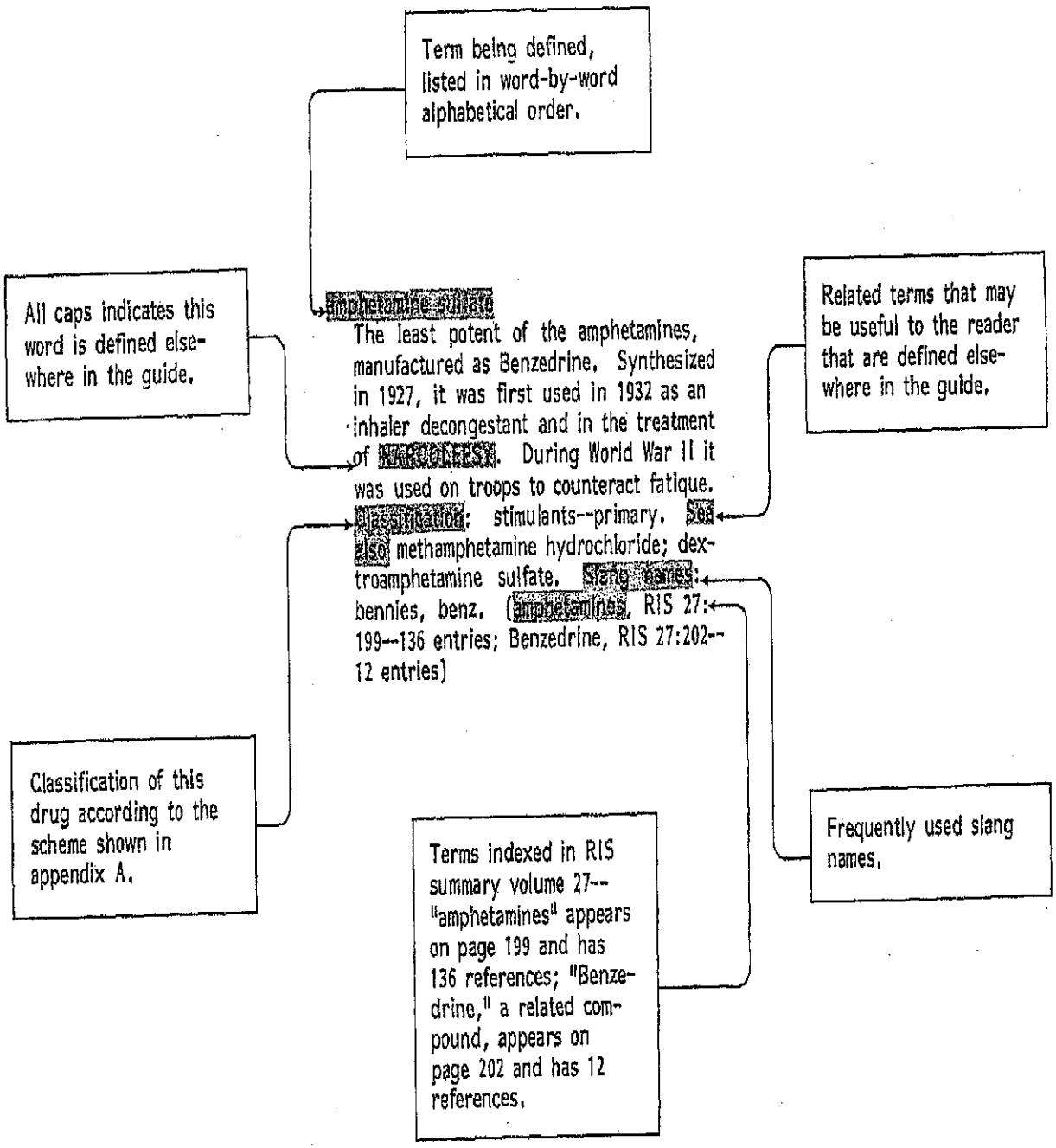

FIGURE 1.--Definition components

the chemical components of a substance. See also urine testing for drugs.

ataractics (ataraxics)
See tranquilizers.

ataxia
Gross muscular incoordination as in alcohol intoxication.

at-risk populations
Subgroups within the population whose members have been identified as being particularly susceptible to becoming drug misusers. These subgroups are usually targeted by organized drug misuse prevention efforts and often include groups such as adolescents, the elderly, and middle-aged housewives.

autonomic nervous system
See nervous system.

automatism, drug
The consumption of drugs without conscious awareness of the amount being taken. This state occurs with heavy users of central nervous system DEPRESSANTS and it has been suggested that it accounts for some deaths from BARBITURATE overdosage. According to this theory, the drug creates a confused state and the user does not recall taking the dose; while in this condition the individual takes another capsule; this process often continues until a lethal overdose has been ingested. Malcolm (1971:151) considers this theory entirely speculative and unproven: "If a person takes an overdose of barbiturates he intends either to die or to indicate to certain significant people that his environment must change. If his intention is the latter and he dies, it is accidental, but this accident is not due to automatism."

aversion therapy
In BEHAVIOR MODIFICATION, the reduction of a behavior through a conditioning procedure in which the behavior is associated with real or imagined noxious stimuli (for example, an electric shock), which would be avoided if possible (Chaplin 1975). A treatment that suppresses undesirable behavior by associating a painful or unpleasant reaction with the behavior (A Psychiatric Glossary 1975). Aversion therapy is frequently used in smoking cessation programs.

B

bad trip
See panic reaction.

bag
Slang. A quantity of leafy or powdered illicit drug (e.g., marijuana, heroin) that comes in a paper or glassine envelope or plastic bag. Local convention and prevailing illicit drug prices determine the quantities of drugs sold by the "bag." The terms "nickel" ($5) and "dime" ($10) bags have long been used as standard street retail units for the packaging of small quantities of drugs, but they have been made nearly extinct by inflation over the years.

balloon effect
Refers to the phenomenon of drug users substituting the use of one type of drug for another when authorities clamp down on their original drug of choice; like a balloon, when drug use is squeezed in one direction it often expands in another, often with adverse results. For example, heroin use increased in Southern California after Operation Intercept's blockade of Mexican marijuana (Bryant et al. 1973).

bam
Slang. Street name for PHENMETRAZINE HYDROCHLORIDE (Preludin).

barbital
One of the long-acting BARBITURATES. Manufactured in 1883, barbital was one of the first barbiturates used in medicine. Manufactured as Veronal. Classification: sedative/hypnotics.

barbiturates
The largest and most common group of the synthetic sedative/hypnotics. In small doses they are effective in sedation and in relieving tension and anxiety, and, like TRANQUILIZERS, they do not cause much drowsiness. In larger doses they are used as hypnotics (sleep inducers). Certain barbiturates are used for epilepsy and intravenous anesthesia. When large dosages are not followed by sleep, signs of mental confusion, euphoria, and even stimulation may occur, similar to that produced

by ALCOHOL, another sedative/hypnotic. Hence barbiturates are often used recreationally by people seeking similar effects to those produced by alcohol, often combining the two. As alcohol potentiates (see POTENTIATION) barbiturate effects, this practice is extremely hazardous. Barbiturates are also used in combination with, or as a substitute for other depressants, such as heroin, and are often taken alternately with AMPHETAMINES, as they tend to enhance the euphoric effects of amphetamines while calming the overwrought nervous states they produce. In large dosages they can cause severe poisoning, deep comas, respiratory and kidney failure, and death. Thus barbiturates play a leading role in fatal poisonings and suicides in the United States. (DRUG) AUTOMATISM has been identified as a potential cause of deaths due to excessive barbiturate use.

Since first used in 1903, over 2,500 barbiturates have been produced, but only 50 commercial brands are now available and only 12 are widely used. In 1970, barbiturates and barbiturate substitutes accounted for 28.6 percent of all prescriptions for psychoactive drugs in America (National Commission on Marihuana and Drug Abuse 1973:43). Although still considered indispensible in medicine, their medical applications have declined primarily due to the availability of other drugs with similar effects such as the antianxiety tranquilizers and other nonbarbiturate sedative-hypnotics.

The barbiturates are usually divided into three categories according to the rate of speed with which they are eliminated from the body: (1) long-acting (6-24 hours)--PHENOBARBITAL (Luminal), BARBITAL (Veronal); (2) short-to-intermediate-acting (3-6 hours)--PENTOBARBITAL SODIUM (Nembutal), SECOBARBITAL SODIUM (Seconal), Tuinal (a secobarbital sodium/AMOBARBITAL combination), and BUTABARBITAL SODIUM (Butisol Sodium or Buticaps); and (3) ultra-short-acting (under 3 hours)--THIOPENTAL SODIUM (Pentothal). The most widely abused and dangerous are the short-to-intermediate-acting barbiturates. Primarily prescribed to treat sleep disturbances, they are the ones most likely to be used to produce intoxication, to be found on the illicit market, and to be used in suicide attempts. In Great Britain, the suffix "-al" is usually replaced by "-one," e.g., barbitone instead of barbital. Classification: sedative/hypnotics. Slang names: rainbows, blue devils, reds, yellows, yellow jackets, blues, blue heavens (based on the unique colors of their pharmaceutical capsules); barbs, downers, down, goofballs, sleeping pills. See also appendix B. (RIS 27:202--48 entries; pentobarbital, RIS 27:222--1 entry; phenobarbital, RIS 27:223--2 entries; secobarbital, RIS 27:223--4 entries)

beer
An alcoholic beverage obtained by the FERMENTATION of barley malt or other grains, often "hopped" (flavored with hops or other aromatic bitters). Most beers contain 3 to 6 percent alcohol by volume (compared to 25 to 50 percent for distilled spirits and 8 to 14 percent for wine). Prior to the 18th century, beer was distinguished from ale by being hopped; with the industrialization of brewing in the 18th century, all malt liquor gradually became hopped and beer and ale are now generally synonymous. In the early 19th century, beer was regarded as a foreign urban drink in the United States (Keller and McCormick 1968). Classification: sedative/hypnotics.

behavior disorder
A broad term that describes a behavior abnormality believed not to be associated with specific organic causes or symptoms. In general, the term is used for abnormalities that affect general and social adjustment, such as drug use, antisocial behavior, and crime.

behavior modification
The changing of human behavior through conditioning or other learning techniques; often used as a synonym for BEHAVIOR THERAPY. One of the major concepts employed by THERAPEUTIC COMMUNITIES. See also aversion therapy.

behavior therapy
The systematic application of learning principles and techniques to the treatment of behavior disorders that focuses on attacking the symptoms rather than tracing the history of the problem as in traditional forms of psychotherapy (Chaplin 1975). BEHAVIOR MODIFICATION is often utilized as a synonym, although the American Psychological Association views behavior therapy as one method of behavior modification, along with aversion therapy (Kinkade 1974).

behavioral pharmacology
The branch of pharmacology that deals with the effects of drugs on behavior, particularly operant behavior processes. See dose-response relationship.

benzene
A toxic, volatile hydrocarbon derived

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Nembutal® Sodium Solution
(pentobarbital sodium injection, USP) CII

℞ only

Vials

DO NOT USE IF MATERIAL HAS PRECIPITATED

DESCRIPTION

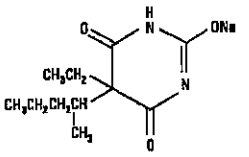
The barbiturates are nonselective central nervous system depressants which are primarily used as sedative hypnotics and also anticonvulsants in subhypnotic doses. The barbiturates and their sodium salts are subject to control under the Federal Controlled Substances Act (See "Drug Abuse and Dependence" section).

The sodium salts of amobarbital, pentobarbital, phenobarbital, and secobarbital are available as sterile parenteral solutions.

Barbiturates are substituted pyrimidine derivatives in which the basic structure common to these drugs is barbituric acid, a substance which has no central nervous system (CNS) activity. CNS activity is obtained by substituting alkyl, alkenyl, or aryl groups on the pyrimidine ring.

NEMBUTAL Sodium Solution (pentobarbital sodium injection) is a sterile solution for intravenous or intramuscular injection. Each mL contains pentobarbital sodium 50 mg, in a vehicle of propylene glycol, 40%, alcohol, 10% and water for injection, to volume. The pH is adjusted to approximately 9.5 with hydrochloric acid and/or sodium hydroxide.

NEMBUTAL Sodium is a short-acting barbiturate, chemically designated as sodium 5-ethyl-5-(1-methylbutyl) barbiturate. The structural formula for pentobarbital sodium is:



The sodium salt occurs as a white, slightly bitter powder which is freely soluble in water and alcohol but practically insoluble in benzene and ether.

CLINICAL PHARMACOLOGY

Barbiturates are capable of producing all levels of CNS mood alteration from excitation to mild sedation, to hypnosis, and deep coma. Overdosage can produce death. In high enough therapeutic doses, barbiturates induce anesthesia.

Barbiturates depress the sensory cortex, decrease motor activity, alter cerebellar function, and produce drowsiness, sedation, and hypnosis.

Barbiturate-induced sleep differs from physiological sleep. Sleep laboratory studies have demonstrated that barbiturates reduce the amount of time spent in the rapid eye movement (REM) phase of sleep or dreaming stage. Also, Stages III and IV sleep are decreased. Following abrupt cessation of barbiturates used regularly, patients may experience markedly increased dreaming, nightmares, and/or insomnia. Therefore, withdrawal of a single therapeutic dose over 5 or 6 days has been recommended to lessen the REM rebound and disturbed sleep which contribute to drug withdrawal syndrome (for example, decrease the dose from 3 to 2 doses a day for 1 week).

In studies, secobarbital sodium and pentobarbital sodium have been found to lose most of their effectiveness for both inducing and maintaining sleep by the end of 2 weeks of continued drug administration at fixed doses. The short-, intermediate-, and, to a lesser degree, long-acting barbiturates have been widely prescribed for treating insomnia. Although the clinical literature abounds with claims that the short-acting barbiturates are superior for producing sleep while the intermediate-acting compounds are more effective in maintaining sleep, controlled studies have failed to demonstrate these differential effects. Therefore, as sleep medications, the barbiturates are of limited value beyond short-term use.

Barbiturates have little analgesic action at subanesthetic doses. Rather, in subanesthetic doses these drugs may increase the reaction to painful stimuli. All barbiturates exhibit anticonvulsant activity in anesthetic doses. However, of the drugs in this class, only phenobarbital, mephobarbital, and metharbital have been clinically demonstrated to be effective as oral anticonvulsants in subhypnotic doses.

Barbiturates are respiratory depressants. The degree of respiratory depression is dependent upon dose. With hypnotic doses, respiratory depression produced by barbiturates is similar to that which occurs during physiologic sleep with slight decrease in blood pressure and heart rate.

Studies in laboratory animals have shown that barbiturates cause reduction in the tone and contractility of the uterus, ureters, and urinary bladder. However, concentrations of the drugs required to produce this effect in humans are not reached with sedative-hypnotic doses.

Barbiturates do not impair normal hepatic function, but have been shown to induce liver microsomal enzymes, thus increasing and/or altering the metabolism of barbiturates and other drugs. (See "Precautions-*Drug Interactions*" section).

Pharmacokinetics:

Barbiturates are absorbed in varying degrees following oral, rectal, or parenteral administration. The salts are more rapidly absorbed than are the acids.

The onset of action for oral or rectal administration varies from 20 to 60 minutes. For IM administration, the onset of action is slightly faster. Following IV administration, the onset of action ranges from almost immediately for pentobarbital sodium to 5 minutes for phenobarbital sodium. Maximal CNS depression may not occur until 15 minutes or more after IV administration for phenobarbital sodium.

Duration of action, which is related to the rate at which the barbiturates are redistributed throughout the body, varies among persons and in the same person from time to time.

No studies have demonstrated that the different routes of administration are equivalent with respect to bioavailability.

Barbiturates are weak acids that are absorbed and rapidly distributed to all tissues and fluids with high concentrations in the brain, liver, and kidneys. Lipid solubility of the barbiturates is the dominant factor in their distribution within the body. The more lipid soluble the barbiturate, the more rapidly it penetrates all tissues of the body. Barbiturates are bound to plasma and tissue proteins to a varying degree with the degree of binding increasing directly as a function of lipid solubility.

Phenobarbital has the lowest lipid solubility, lowest plasma binding, lowest brain protein binding, the longest delay in onset of activity, and the longest duration of action. At the opposite extreme is secobarbital which has the highest lipid solubility, plasma protein binding, brain protein binding, the shortest delay in onset of activity, and the shortest duration of action. Butabarbital is classified as an intermediate barbiturate.

The plasma half-life for pentobarbital in adults is 15 to 50 hours and appears to be dose dependent.

Barbiturates are metabolized primarily by the hepatic microsomal enzyme system, and the metabolic products are excreted in the urine, and less commonly, in the feces. Approximately 25 to 50 percent of a dose of aprobarbital or phenobarbital is eliminated unchanged in the urine, whereas the amount of other barbiturates excreted unchanged in the urine is negligible. The excretion of unmetabolized barbiturate is one feature that distinguishes the long-acting category from those belonging to other categories which are almost entirely metabolized. The inactive metabolites of the barbiturates are excreted as conjugates of glucuronic acid.

INDICATIONS AND USAGE

Parenteral:

a. Sedatives.

b. Hypnotics, for the short-term treatment of insomnia, since they appear to lose their effectiveness for sleep induction and sleep maintenance after 2 weeks (See "Clinical Pharmacology" section.)

c. Preanesthetics.

d. Anticonvulsant, in anesthetic doses, in the emergency control of certain acute convulsive episodes, e.g., those associated with status epilepticus, cholera, eclampsia, meningitis, tetanus, and toxic reactions to strychnine or local anesthetics.

CONTRAINDICATIONS

Barbiturates are contraindicated in patients with known barbiturate sensitivity. Barbiturates are also contraindicated in patients with a history of manifest or latent porphyria.

WARNINGS

1. *Habit forming:* Barbiturates may be habit forming. Tolerance, psychological and physical dependence may occur with continued use. (See "Drug Abuse and Dependence" and "*Pharmacokinetics*" sections.) Patients who have psychological dependence on barbiturates may increase the dosage or decrease the dosage interval without consulting a physician and may subsequently develop a physical dependence on barbiturates. To minimize the possibility of overdosage or the development of dependence, the prescribing and dispensing of sedative-hypnotic barbiturates should be limited to the amount required for the interval until the next appointment. Abrupt cessation after prolonged use in the dependent person may result in withdrawal symptoms, including delirium, convulsions, and possibly death. Barbiturates should be withdrawn gradually from any patient known to be taking excessive dosage over long periods of time. (See "Drug Abuse and Dependence" section.)
2. *IV administration:* Too rapid administration may cause respiratory depression, apnea, laryngospasm, or vasodilation with fall in blood pressure.
3. *Acute or chronic pain:* Caution should be exercised when barbiturates are administered to patients with acute or chronic pain, because paradoxical excitement could be induced or important symptoms could be masked. However, the use of barbiturates as sedatives in the postoperative surgical period and as adjuncts to cancer chemotherapy is well established.
4. *Use in pregnancy:* Barbiturates can cause fetal damage when administered to a pregnant woman. Retrospective, case-controlled studies have suggested a connection between the maternal consumption of barbiturates and a higher than expected incidence of fetal abnormalities. Following oral or parenteral administration, barbiturates readily cross the placental barrier and are distributed throughout fetal tissues with highest concentrations found in the placenta, fetal liver, and brain. Fetal blood levels approach maternal blood levels following parenteral administration.

   Withdrawal symptoms occur in infants born to mothers who receive barbiturates throughout the last trimester of pregnancy. (See "Drug Abuse and Dependence" section.) If this drug is used during pregnancy, or if the patient becomes pregnant while taking this drug, the patient should be apprised of the potential hazard to the fetus.
5. *Synergistic effects:* The concomitant use of alcohol or other CNS depressants may produce additive CNS depressant effects.
6. *Pediatric neurotoxicity:* Published animal studies demonstrate that the administration of anesthetic and sedation drugs that block NMDA receptors and/or potentiate GABA activity increase neuronal apoptosis in the developing brain and result in long-term cognitive deficits when used for longer than 3 hours. The clinical significance of these findings is not clear. However, based on the available data, the window of vulnerability to these changes is believed to correlate with exposures in the third trimester of gestation through the first several months of life, but may extend out to approximately three years of age in humans (see "Precautions-*Pregnancy* and *Pediatric Use*" and "Animal Pharmacology and/or Toxicology").

Some published studies in children suggest that similar deficits may occur after repeated or prolonged exposures to anesthetic agents early in life and may result in adverse cognitive or behavioral effects. These studies have substantial limitations, and it is not clear if the observed effects are due to the anesthetic/sedation drug administration or other factors such as the surgery or underlying illness.

Anesthetic and sedation drugs are a necessary part of the care of children and pregnant women needing surgery, other procedures, or tests that cannot be delayed, and no specific medications have been shown to be safer than any other. Decisions regarding the timing of any elective procedures requiring anesthesia should take into consideration the benefits of the procedure weighed against the potential risks.

PRECAUTIONS

General:

Barbiturates may be habit forming. Tolerance and psychological and physical dependence may occur with continuing use. (See "Drug Abuse and Dependence" section.) Barbiturates should be administered with caution, if at all, to patients who are mentally depressed, have suicidal tendencies, or a history of drug abuse.

Elderly or debilitated patients may react to barbiturates with marked excitement, depression, and confusion. In some persons, barbiturates repeatedly produce excitement rather than depression.

In patients with hepatic damage, barbiturates should be administered with caution and initially in reduced doses. Barbiturates should not be administered to patients showing the premonitory signs of hepatic coma.

Parenteral solutions of barbiturates are highly alkaline. Therefore, extreme care should be taken to avoid perivascular extravasation or intra-arterial injection. Extravascular injection may cause local tissue damage with subsequent necrosis; consequences of intra-arterial injection may vary from transient pain to gangrene of the limb. Any complaint of pain in the limb warrants stopping the injection.

Information for the patient:

Practitioners should give the following information and instructions to patients receiving barbiturates.

1. The use of barbiturates carries with it an associated risk of psychological and/or physical dependence. The patient should be warned against increasing the dose of the drug without consulting a physician.
2. Barbiturates may impair mental and/or physical abilities required for the performance of potentially hazardous tasks (e.g., driving, operating machinery, etc.).
3. Alcohol should not be consumed while taking barbiturates. Concurrent use of the barbiturates with other CNS depressants (e.g., alcohol, narcotics, tranquilizers, and antihistamines) may result in additional CNS depressant effects.
4. **Effect of anesthetic and sedation drugs on early brain development**
   Studies conducted in young animals and children suggest repeated or prolonged use of general anesthetic or sedation drugs in children younger than 3 years may have negative effects on their developing brains. Discuss with parents and caregivers the benefits, risks, and timing and duration of surgery or procedures requiring anesthetic and sedation drugs. Because some animal data suggest that the window of vulnerability includes the 3rd trimester of pregnancy, discuss with pregnant women the benefits, risks, and timing and duration of surgery or procedures requiring anesthetic and sedation drugs. (See "Warnings-*Pediatric Neurotoxicity*".)

Laboratory tests:

Prolonged therapy with barbiturates should be accompanied by periodic laboratory evaluation of organ systems, including hematopoietic, renal, and hepatic systems. (See "Precautions-*General*" and "Adverse Reactions" sections.)

Drug interactions:

Most reports of clinically significant drug interactions occurring with the barbiturates have involved phenobarbital. However, the application of these data to other barbiturates appears valid and warrants serial blood level determinations of the relevant drugs when there are multiple therapies.

1. *Anticoagulants:* Phenobarbital lowers the plasma levels of dicumarol (name previously used: bishydroxycoumarin) and causes a decrease in anticoagulant activity as measured by the prothrombin time. Barbiturates can induce hepatic microsomal enzymes resulting in increased metabolism and decreased anticoagulant response of oral anticoagulants (e.g., warfarin, acenocoumarol, dicumarol, and phenprocoumon). Patients stabilized on anticoagulant therapy may require dosage adjustments if barbiturates are added to or withdrawn from their dosage regimen.
2. *Corticosteroids:* Barbiturates appear to enhance the metabolism of exogenous corticosteroids probably through the induction of hepatic microsomal enzymes. Patients stabilized on corticosteroid therapy may require dosage adjustments if barbiturates are added to or withdrawn from their dosage regimen.
3. *Griseofulvin:* Phenobarbital appears to interfere with the absorption of orally administered griseofulvin, thus decreasing its blood level. The effect of the resultant decreased blood levels of griseofulvin on therapeutic response has not been established. However, it would be preferable to avoid concomitant administration of these drugs.
4. *Doxycycline:* Phenobarbital has been shown to shorten the half-life of doxycycline for as long as 2 weeks after barbiturate therapy is discontinued.

   This mechanism is probably through the induction of hepatic microsomal enzymes that metabolize the antibiotic. If phenobarbital and doxycycline are administered concurrently, the clinical response to doxycycline should be monitored closely.
5. *Phenytoin, sodium valproate, valproic acid:* The effect of barbiturates on the metabolism of phenytoin appears to be variable. Some investigators report an accelerating effect, while others report no effect. Because the effect of barbiturates on the metabolism of phenytoin is not predictable, phenytoin and barbiturate blood levels should be monitored more frequently if these drugs are given concurrently. Sodium valproate and valproic acid appear to decrease barbiturate metabolism; therefore, barbiturate blood levels should be monitored and appropriate dosage adjustments made as indicated.
6. *Central nervous system depressants:* The concomitant use of other central nervous system depressants, including other sedatives or hypnotics, antihistamines, tranquilizers, or alcohol, may produce additive depressant effects.
7. *Monoamine oxidase inhibitors (MAOI):* MAOI prolong the effects of barbiturates probably because metabolism of the barbiturate is inhibited.
8. *Estradiol, estrone, progesterone and other steroidal hormones:* Pretreatment with or concurrent administration of phenobarbital may decrease the effect of estradiol by increasing its metabolism. There have been reports of patients treated with antiepileptic drugs (e.g., phenobarbital) who became pregnant while taking oral contraceptives. An alternate contraceptive method might be suggested to women taking phenobarbital.

Carcinogenesis:

1. *Animal data.* Phenobarbital sodium is carcinogenic in mice and rats after lifetime administration. In mice, it produced benign and malignant liver cell tumors. In rats, benign liver cell tumors were observed very late in life.
2. *Human data.* In a 29-year epidemiological study of 9,136 patients who were treated on an anticonvulsant protocol that included phenobarbital, results indicated a higher than normal incidence of hepatic carcinoma. Previously, some of these patients were treated with thorotrast, a drug that is known to produce hepatic carcinomas. Thus, this study did not provide sufficient evidence that phenobarbital sodium is carcinogenic in humans.

   Data from one retrospective study of 235 children in which the types of barbiturates are not identified suggested an association between exposure to barbiturates prenatally and an increased incidence of brain tumor. (Gold, E., et al., "Increased Risk of Brain Tumors in Children Exposed to Barbiturates," Journal of National Cancer Institute, 61:1031-1034, 1978).

Pregnancy:

1. *Teratogenic effects.* Pregnancy Category D—See "Warnings-*Use in Pregnancy*" section.
2. *Nonteratogenic effects.* Reports of infants suffering from long-term barbiturate exposure *in utero* included the acute withdrawal syndrome of seizures and hyperirritability from birth to a delayed onset of up to 14 days. (See "Drug Abuse and Dependence" section.)
3. Published studies in pregnant primates demonstrate that the administration of anesthetic and sedation drugs that block NMDA receptors and/or potentiate GABA activity during the period of peak brain development increases neuronal apoptosis in the developing brain of the offspring when used for longer than 3 hours. There are no data on pregnancy exposures in primates corresponding to periods prior to the third trimester in humans.

   In a published study, administration of an anesthetic dose of ketamine for 24 hours on Gestation Day 122 increased neuronal apoptosis in the developing brain of the fetus. In other published studies, administration of either isoflurane or propofol for 5 hours on Gestation Day 120 resulted in increased neuronal and oligodendrocyte apoptosis in the developing brain of the offspring. With respect to brain development, this time period corresponds to the third trimester of gestation in the human. The clinical significance of these findings is not clear; however, studies in juvenile animals suggest neuroapoptosis correlates with long-term cognitive deficits (see "Warnings-*Pediatric Neurotoxicity*", "Precautions-*Pediatric Use*", and "Animal Pharmacology and/or Toxicology").

Labor and delivery:

Hypnotic doses of these barbiturates do not appear to significantly impair uterine activity during labor. Full anesthetic doses of barbiturates decrease the force and frequency of uterine contractions. Administration of sedative-hypnotic barbiturates to the mother during labor may result in respiratory depression in the newborn. Premature infants are particularly susceptible to the depressant effects of barbiturates. If barbiturates are used during labor and delivery, resuscitation equipment should be available.

Data are currently not available to evaluate the effect of these barbiturates when forceps delivery or other intervention is necessary. Also, data are not available to determine the effect of these barbiturates on the later growth, development, and functional maturation of the child.

Nursing mothers:

Caution should be exercised when a barbiturate is administered to a nursing woman since small amounts of barbiturates are excreted in the milk.

Pediatric use:

No adequate well-controlled studies have been conducted in pediatric patients; however, safety and effectiveness of pentobarbital in pediatric patients is supported by numerous studies and case reports cited in the literature.

Pediatric dosing information for Nembutal is described in the DOSAGE AND ADMINISTRATION section.

Published juvenile animal studies demonstrate that the administration of anesthetic and sedation drugs, such as Pentobarbital Sodium Injection USP, (Nembutal) that either block NMDA receptors or potentiate the activity of GABA during the period of rapid brain growth or synaptogenesis, results in widespread neuronal and oligodendrocyte cell loss in the developing brain and alterations in synaptic morphology and neurogenesis. Based on comparisons across species, the window of vulnerability to these changes is believed to correlate with exposures in the third trimester of gestation through the first several months of life, but may extend out to approximately 3 years of age in humans.

In primates, exposure to 3 hours of ketamine that produced a light surgical plane of anesthesia did not increase neuronal cell loss, however, treatment regimens of 5 hours or longer of isoflurane increased neuronal cell loss. Data from isoflurane-treated rodents and ketamine-treated primates suggest that the neuronal and oligodendrocyte cell losses are associated with prolonged cognitive deficits in learning and memory. The clinical significance of these nonclinical findings is not known, and healthcare providers should balance the benefits of appropriate anesthesia in pregnant women, neonates, and young children who require procedures with the potential risks suggested by the nonclinical data. (See "Warnings-*Pediatric Neurotoxicity*", "Precautions-*Pregnancy*", and "Animal Pharmacology and/or Toxicology".)

Geriatric use:
Clinical studies of Nembutal have not included sufficient numbers of subjects aged 65 and over to determine whether elderly subjects respond differently from younger subjects. Other reported clinical experience has not identified differences in responses between the elderly and younger patients. In general, dose selection for an elderly patient should be cautious, usually starting at the low end of the dosing range, reflecting the greater frequency of decreased hepatic, renal or cardiac function, and of concomitant disease or other drug therapy.

Elderly patients may react to barbiturates with marked excitement, depression, and confusion. In some persons, barbiturates repeatedly produce excitement rather than depression. Dosage should be reduced in the elderly because these patients may be more sensitive to barbiturates.

ADVERSE REACTIONS
The following adverse reactions and their incidence were compiled from surveillance of thousands of hospitalized patients. Because such patients may be less aware of certain of the milder adverse effects of barbiturates, the incidence of these reactions may be somewhat higher in fully ambulatory patients.

More than 1 in 100 patients. The most common adverse reaction estimated to occur at a rate of 1 to 3 patients per 100 is: *Nervous System:* Somnolence.

Less than 1 in 100 patients. Adverse reactions estimated to occur at a rate of less than 1 in 100 patients listed below, grouped by organ system, and by decreasing order of occurrence are:

Nervous system: Agitation, confusion, hyperkinesia, ataxia, CNS depression, nightmares, nervousness, psychiatric disturbance, hallucinations, insomnia, anxiety, dizziness, thinking abnormality.

Respiratory system: Hypoventilation, apnea.

Cardiovascular system: Bradycardia, hypotension, syncope.

Digestive system: Nausea, vomiting, constipation.

Other reported reactions: Headache, injection site reactions, hypersensitivity reactions (angioedema, skin rashes, exfoliative dermatitis), fever, liver damage, megalobiastic anemia following chronic phenobarbital use.

To report SUSPECTED ADVERSE REACTIONS, contact Oak Pharmaceuticals, Inc. at 1-800-932-5676 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

DRUG ABUSE AND DEPENDENCE
Pentobarbital sodium injection is subject to control by the Federal Controlled Substances Act under DEA schedule II.

Barbiturates may be habit forming. Tolerance, psychological dependence, and physical dependence may occur especially following prolonged use of high doses of barbiturates. Daily administration in excess of 400 milligrams (mg) of pentobarbital or secobarbital for approximately 90 days is likely to produce some degree of physical dependence. A dosage of from 600 to 800 mg taken for at least 35 days is sufficient to produce withdrawal seizures. The average daily dose for the barbiturate addict is usually about 1.5 grams. As tolerance to barbiturates develops, the amount needed to maintain the same level of intoxication increases; tolerance to a fatal dosage, however, does not increase more than two-fold. As this occurs, the margin between an intoxicating dosage and fatal dosage becomes smaller.

Symptoms of acute intoxication with barbiturates include unsteady gait, slurred speech, and sustained nystagmus. Mental signs of chronic intoxication include confusion, poor judgment, irritability, insomnia, and somatic complaints.

Symptoms of barbiturate dependence are similar to those of chronic alcoholism. If an individual appears to be intoxicated with alcohol to a degree that is radically disproportionate to the amount of alcohol in his or her blood the use of barbiturates should be suspected. The lethal dose of a barbiturate is far less if alcohol is also ingested.

The symptoms of barbiturate withdrawal can be severe and may cause death. Minor withdrawal symptoms may appear 8 to 12 hours after the last dose of a barbiturate. These symptoms usually appear in the following order: anxiety, muscle twitching, tremor of hands and fingers, progressive weakness, dizziness, distortion in visual perception, nausea, vomiting, insomnia, and orthostatic hypotension. Major withdrawal symptoms (convulsions and delirium) may occur within 16 hours and last up to 5 days after abrupt cessation of these drugs. Intensity of withdrawal symptoms gradually declines over a period of approximately 15 days. Individuals susceptible to barbiturate abuse and dependence include alcoholics and opiate abusers, as well as other sedative-hypnotic and amphetamine abusers.

Drug dependence to barbiturates arises from repeated administration of a barbiturate or agent with barbiturate-like effect on a continuous basis, generally in amounts exceeding therapeutic dose levels. The characteristics of drug dependence to barbiturates include: (a) a strong desire or need to continue taking the drug; (b) a tendency to increase the dose; (c) a psychic dependence on the effects of the drug related to subjective and individual appreciation of those effects; and (d) a physical dependence on the effects of the drug requiring its presence for maintenance of homeostasis and resulting in a definite, characteristic, and self-limited abstinence syndrome when the drug is withdrawn.

Treatment of barbiturate dependence consists of cautious and gradual withdrawal of the drug. Barbiturate-dependent patients can be withdrawn by using a number of different withdrawal regimens. In all cases withdrawal takes an extended period of time. One method involves substituting a 30 mg dose of phenobarbital for each 100 to 200 mg dose of barbiturate that the patient has been taking. The total daily amount of phenobarbital is then administered in 3 to 4 divided doses, not to exceed 600 mg daily. Should signs of withdrawal occur on the first day of treatment, a loading dose of 100 to 200 mg of phenobarbital may be administered IM in addition to the oral dose. After stabilization on phenobarbital, the total daily dose is decreased by 30 mg a day as long as withdrawal is proceeding smoothly. A modification of this regimen involves initiating treatment at the patient's regular dosage level and decreasing the daily dosage by 10 percent if tolerated by the patient.

Infants physically dependent on barbiturates may be given phenobarbital 3 to 10 mg/kg/day. After withdrawal symptoms (hyperactivity, disturbed sleep, tremors, hyperreflexia) are relieved, the dosage of phenobarbital should be gradually decreased and completely withdrawn over a 2-week period.

OVERDOSAGE
The toxic dose of barbiturates varies considerably. In general, an oral dose of 1 gram of most barbiturates produces serious poisoning in an adult. Death commonly occurs after 2 to 10 grams of ingested barbiturate. Barbiturate intoxication may be confused with alcoholism, bromide intoxication, and with various neurological disorders.

Acute overdosage with barbiturates is manifested by CNS and respiratory depression which may progress to Cheyne-Stokes respiration, areflexia, constriction of the pupils to a slight degree (though in severe poisoning they may show paralytic dilation), oliguria, tachycardia, hypotension, lowered body temperature, and coma. Typical shock syndrome (apnea, circulatory collapse, respiratory arrest, and death) may occur.

In extreme overdose, all electrical activity in the brain may cease, in which case a "flat" EEG normally equated with clinical death cannot be accepted. This effect is fully reversible unless hypoxic damage occurs. Consideration should be given to the possibility of barbiturate intoxication even in situations that appear to involve trauma.

Complications such as pneumonia, pulmonary edema, cardiac arrhythmias, congestive heart failure, and renal failure may occur. Uremia may increase CNS sensitivity to barbiturates. Differential diagnosis should include hypoglycemia, head trauma, cerebrovascular accidents, convulsive states, and diabetic coma. Blood levels from acute overdosage for some barbiturates are listed in Table 1.

Table 1. Concentration of Barbiturate in the Blood Versus Degree of CNS Depression

		Blood barbiturate level in ppm (µg/mL)				
Barbiturate	Onset/ duration	Degree of depression in nontolerant persons*				
		1	2	3	4	5
Pentobarbital	Fast/short	≤2	0.5 to 3	10 to 15	12 to 25	15 to 40
Secobarbital	Fast/short	≤2	0.5 to 5	10 to 15	15 to 25	15 to 40
Amobarbital	Intermediate/ intermediate	≤3	2 to 10	30 to 40	30 to 60	40 to 80
Butabarbital	Intermediate/ intermediate	≤5	3 to 25	40 to 60	50 to 80	60 to 100
Phenobarbital	Slow/long	≤10	5 to 40	50 to 80	70 to 120	100 to 200

*Categories of degree of depression in nontolerant persons:

1. Under the influence and appreciably impaired for purposes of driving a motor vehicle or performing tasks requiring alertness and unimpaired judgment and reaction time.
2. Sedated, therapeutic range, calm, relaxed, and easily aroused.
3. Comatose, difficult to arouse, significant depression of respiration.
4. Compatible with death in aged or ill persons or in presence of obstructed airway, other toxic agents, or exposure to cold.
5. Usual lethal level, the upper end of the range includes those who received some supportive treatment.

Treatment of overdosage is mainly supportive and consists of the following:

1. Maintenance of an adequate airway, with assisted respiration and oxygen administration as necessary.
2. Monitoring of vital signs and fluid balance.
3. Fluid therapy and other standard treatment for shock, if needed.
4. If renal function is normal, forced diuresis may aid in the elimination of the barbiturate. Alkalinization of the urine increases renal excretion of some barbiturates, especially phenobarbital, also aprobarbital and mephobarbital (which is metabolized to phenobarbital).
5. Although not recommended as a routine procedure, hemodialysis may be used in severe barbiturate intoxications or if the patient is anuric or in shock.
6. Patient should be rolled from side to side every 30 minutes.
7. Antibiotics should be given if pneumonia is suspected.
8. Appropriate nursing care to prevent hypostatic pneumonia, decubiti, aspiration, and other complications of patients with altered states of consciousness.

DOSAGE AND ADMINISTRATION
Dosages of barbiturates must be individualized with full knowledge of their particular characteristics and recommended rate of administration. Factors of consideration are the patient's age, weight, and condition. Parenteral routes should be used only when oral administration is impossible or impractical.

Intramuscular Administration: IM injection of the sodium salts of barbiturates should be made deeply into a large muscle, and a volume of 5 mL should not be exceeded at any one site because of possible tissue irritation. After IM injection of a hypnotic dose, the patient's vital signs should be monitored. The usual adult dosage of NEMBUTAL Sodium Solution is 150 to 200 mg as a single IM injection; the recommended pediatric dosage ranges from 2 to 6 mg/kg as a single IM injection not to exceed 100 mg.

Intravenous Administration: NEMBUTAL Sodium Solution should not be admixed with any other medication or solution. IV injection is restricted to conditions in which other routes are not feasible, either because the patient is unconscious (as in cerebral hemorrhage, eclampsia, or status epilepticus), or because the patient resists (as in delirium), or because prompt action is imperative. Slow IV injection is essential, and patients should be carefully observed during administration. This requires that blood pressure, respiration, and cardiac function be maintained, vital signs be recorded, and equipment for resuscitation and artificial ventilation be available. The rate of IV injection should not exceed 50 mg/min for pentobarbital sodium.

There is no average intravenous dose of NEMBUTAL Sodium Solution (pentobarbital sodium injection) that can be relied on to produce similar effects in different patients. The possibility of overdose and respiratory depression is remote when the drug is injected slowly in fractional doses.

A commonly used initial dose for the 70 kg adult is 100 mg. Proportional reduction in dosage should be made for pediatric or debilitated patients. At least one minute is necessary to determine the full effect of intravenous pentobarbital. If necessary, additional small increments of the drug may be given up to a total of from 200 to 500 mg for normal adults.

Anticonvulsant use: In convulsive states, dosage of NEMBUTAL Sodium Solution should be kept to a minimum to avoid compounding the depression which may follow convulsions. The injection must be made slowly with due regard to the time required for the drug to penetrate the blood-brain barrier.

Special patient population: Dosage should be reduced in the elderly or debilitated because these patients may be more sensitive to barbiturates. Dosage should be reduced for patients with impaired renal function or hepatic disease.

Inspection: Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration, whenever solution containers permit. Solutions for injection showing evidence of precipitation should not be used.

HOW SUPPLIED

NEMBUTAL Sodium Solution (pentobarbital sodium injection, USP) is available in the following sizes: 20-mL multiple-dose vial, 1 g per vial (NDC 76478-501-20); and 50-mL multiple-dose vial, 2.5 g per vial (NDC 76478-501-50).

Each mL contains:

Pentobarbital Sodium, derivative of barbituric acid	50 mg
Propylene glycol	40% v/v
Alcohol	10%
Water for Injection	qs

(pH adjusted to approximately 9.5 with hydrochloric acid and/or sodium hydroxide.)
Vial stoppers are latex free.

Exposure of pharmaceutical products to heat should be minimized. Avoid excessive heat. Protect from freezing. It is recommended that the product be stored at 20°-25°C (68°-77°F), however, brief excursions are permitted between 15°-30°C (59°-86°F). See USP controlled room temperature.

ANIMAL PHARMACOLOGY AND/OR TOXICOLOGY

Published studies in animals demonstrate that the use of anesthetic agents during the period of rapid brain growth or synaptogenesis results in widespread neuronal and oligodendrocyte cell loss in the developing brain and alterations in synaptic morphology and neurogenesis. Based on comparisons across species, the window of vulnerability to these changes is believed to correlate with exposures in the third trimester through the first several months of life, but may extend out to approximately 3 years of age in humans.

In primates, exposure to 3 hours of exposure to an anesthetic regimen that produced a light surgical plane of anesthesia did not increase neuronal cell loss, however, treatment regimens of 5 hours or longer increased neuronal cell loss. Data in rodents and in primates suggest that the neuronal and oligodendrocyte cell losses are associated with subtle but prolonged cognitive deficits in learning and memory. The clinical significance of these nonclinical findings is not known, and healthcare providers should balance the benefits of appropriate anesthesia in neonates and young children who require procedures against the potential risks suggested by the nonclinical data (see "Warnings-*Pediatric Neurotoxicity*" and "Precautions-*Pregnancy* and *Pediatric Use*").

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